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IRON AGE

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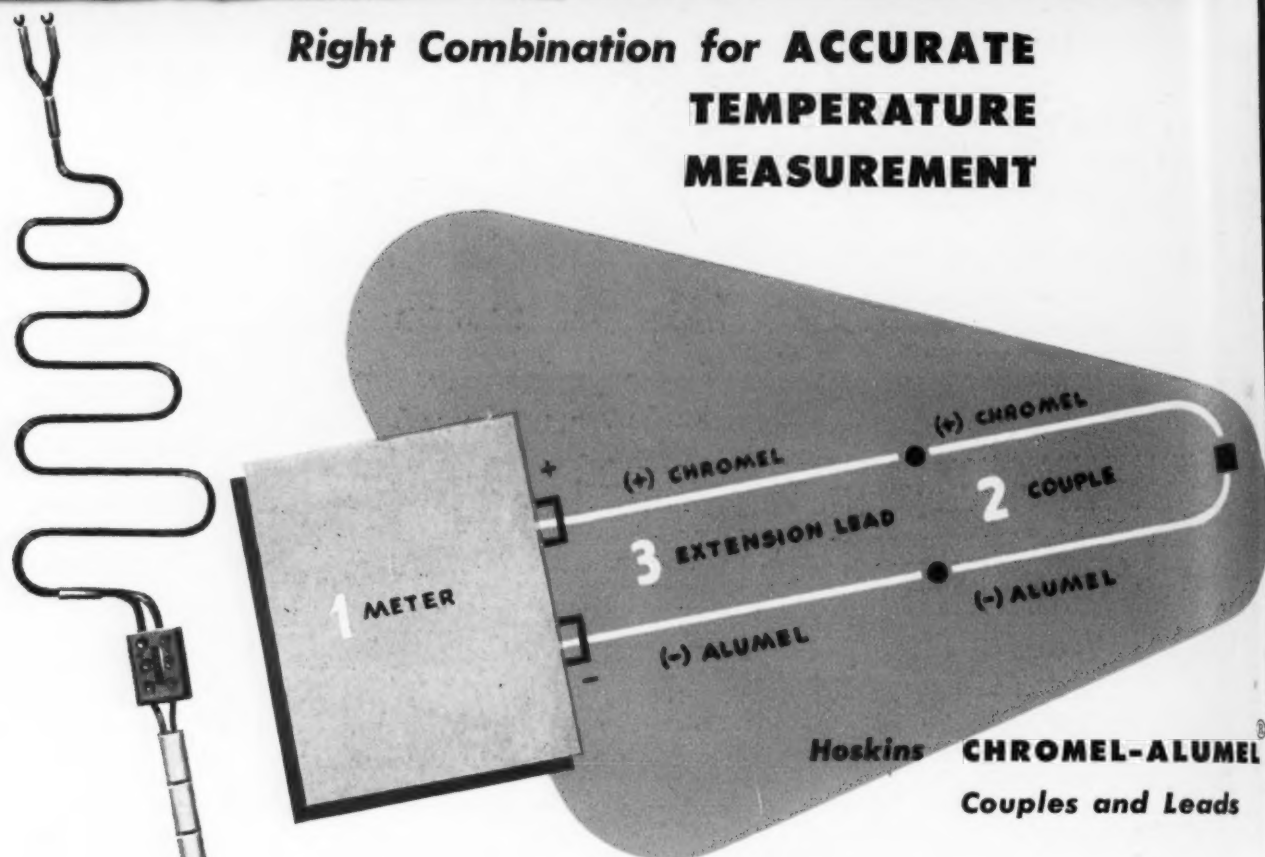
THE NATIONAL METALWORKING WEEKLY September 15, 1949



MESTA

DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS

Right Combination for **ACCURATE TEMPERATURE MEASUREMENT**



If you're concerned with accurate temperature measurement in your heat treating operations, you'll do well to check your meter installations against the diagram shown above. It means simply this:

- (1) Make sure your pyrometers are of recent manufacture . . . precision built . . . capable of accurately registering true temperature—EMF values . . . and calibrated for dependably accurate Chromel-Alumel Thermocouples.
- (2) Standardize on durable Chromel-Alumel Thermocouples. They're highly responsive to temperature fluctuations . . . so resistant to oxidation you need not pack the protection tube. And they carry a positive accuracy guarantee of $\pm 5^\circ\text{F.}$ from 32° to 660°F. , and $\pm \frac{3}{4}\%$ at temperatures above 660°F.
- (3) Then, of course, complete your chain of accuracy by using Chromel-Alumel "extension" leads. For, by using wires of identical compositions for both couples and leads, you eliminate all possibility of "cold-end" errors.

Our Catalog M¹ tells the complete technical story . . . and additional reference can be found in the following Bureau of Standards Research papers: R.P. 767—"Standard Tables for Chromel-Alumel Thermocouples"; R.P. 768—"Methods of Testing Thermocouples"; R.P. 1278—"Stability of Base Metal Thermocouples in Air at 800° to 2200°F. "

Chromel-Alumel couples and leads are available through your pyrometer manufacturer.



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Heating Element Alloys ★ Heat Resistant Alloys ★ Thermocouple Alloys ★ Spark Plug Electrode Wire ★ Special Alloys of Nickel ★ Electric Heat Treating and Laboratory Furnaces



Sketch of penstock for Santa Barbara project is shown at left. Complete penstock consists of 3-branch wye joined to three parallel pipes. Mayari R plates used in the pipes vary from $\frac{1}{4}$ inch at the upper end to 1 inch at the downstream end.

3-branch penstock wye of Mayari R, fabricated by Bethlehem for the Santa Barbara Hydroelectric Project, Republic of Mexico. Inlet end of wye is 126 inches in diameter; the three outlet ends are 73 inches in diameter; Mayari R plates $\frac{1}{2}$ -inch thick were used in this assembly.



$\frac{1}{3}$ less steel

$\frac{1}{3}$ less field welding

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Approximately 450 tons of steel were saved by designing this large penstock for Mayari R low-alloy, high-tensile steel instead of the ordinary carbon steel plate. The higher properties of Mayari R permitted it to be used in substantially thinner gages without sacrificing strength. This, of course, resulted in a worthwhile reduction in the cost of materials and shipping.

Another important saving was made during the erection of the penstock. Because of the thinner walls

of Mayari R only one-half as much weld metal was needed for each joint; also, longer sections could be handled by the lifting equipment, thereby reducing the number of joints. The total cost for field welding was approximately one-third less than it would have been for a comparable penstock of carbon steel.

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September 15, 1949

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Editorial

INDUSTRY VIEWPOINTS

The Steel Board's Recommendations

THE Presidential steel fact finding board's report was neither as bad as steel people expected nor as good as the union had hoped. It was remarkable for its simplicity—and for its bluntness. It put to rest a lot of union fairy tales about steel and it gave its idea of the steel industry's responsibility on social insurance and pensions in strong words.

The report ought to be must reading. It says that social insurance and pensions paid for by industry should be considered as insurance to take care of temporary and permanent depreciation of the "human machine" the same as plant equipment is provided for. The ability to pay was considered but was not the board's primary argument. The board said that steel was up and coming on wages but was backward on insurance and pension plans.

In a nut shell the board recommended: that there be no fourth wage round; that an insurance plan costing about 4¢ an hr—with credit for existing plans—be adopted and that a pension plan amounting to 6¢ an hr—with credit for existing plans—be established after a commission studies the problem so that intelligent collective bargaining can proceed to an agreement.

The board rejected all the union's loose arguments on productivity, ability to pay, excessive profits, the need for a wage increase, high-priced social insurance plans and a \$125 to \$150 pension per month over and above the government old age benefits. The rejections were blunt and short.

A big surprise was the rejection of a wage increase demand on the basis that it was not justified and that if granted it would upset the applecart for industry as a whole. No inequities were found in steel wages. The board said that stockholders' dividends were but a minor fraction of profits. And it said that maybe profits spent for expansion should have gone to stockholders and funds for social insurance and pensions with long-term financing supplying money for expansions.

Steel management now has a tremendous responsibility. It went into the steel hearings saying that it would not be bound by recommendations of the board. The board's findings were a surprise to steel people. No wage increase is involved. Recommended social insurance and pension plans would be a part of wage costs. But credit would be available for plans in existence. The costs could be as low as 8¢ an hr.

If steel firms do not agree to the board's findings there will be a strike. Such a strike might ruin the budding zephyr of better business.

Steel chose 60 days ago not to fight but to submit to the board under protest. Now it does not have much to fight about—or at least not enough to plunge the country into a steel strike. It is a ticklish decision to make. We don't believe there will be a strike.

But we do believe that this steel board drama should be a lesson to the union and to steel. Together they could not settle their differences. The government stepped in. Government through its board has made recommendations which carry weight. Management and the union had better take another look before either again seeks government guidance. Some day recommendations might become "orders" with both management and labor in a governmental straight jacket.

Tom C. Campbell

Editor

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Cranes that are *tough*—that take the gaff of heavy switching operations . . . Straight, simple, Diesel cranes that stand up under the heaviest service . . . Simple, rugged travel gears warranted for the life of the machine . . . We know that these cranes will do your work . . . We back what we know with our guarantee.



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NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

► The first automatic billet charging machine to feed a rod mill heating furnace started operation last week. Five such units are now on order. The machine is fully automatic, requires no labor.

► The shortage of galvanized sheets is now so acute that consumers will now buy almost any suitable grade even though it may be more expensive than they need. Price is no longer any object with many buyers.

Principal reason for the shortage is the federal corn crib program which steel companies have given top priority—extending delivery schedules to other galvanized sheet users by 3 to 4 weeks.

► Although farm buying fell off this spring in sympathy with pessimism in urban centers it has now returned to a more normal pattern, with a marked pickup in demand for the lower priced consumer goods items in the metal lines.

► Considerable interest has been expressed in "Rent-With-Option-to-Buy" plans for merchandising machinery. One company selling under this plan has received a ruling from the Treasury Dept. that rent paid up to the time the option to buy is exercised can be deducted as an expense by the customer.

This, in effect, provides a means for accelerating depreciation on such equipment.

► Before it is through, the national bill for smoke abatement will reach a staggering figure. One large public utility company has already spent \$21 million on its program.

► Israel will soon have a steel mill. French equipment with an annual capacity of 40,000 tons has already been delivered at Haifa to produce concrete reinforcing bars.

► American dependence on foreign sources—including Russia—for manganese ore can be reduced, according to proponents of a new chemical process for recovering manganese from low grade ores. The process is said to be able to recover 60 pct Mn content from ores with as little as 10 to 20 pct contained Mn. It is said that a moderate sized plant using standard equipment could process up to 48 tons of ore daily.

► Auto service parts are coming out of the doldrums. Volume is not up to 1948 levels and while orders are small their number is up sharply. It is believed that dealer inventory adjustments have about run their course.

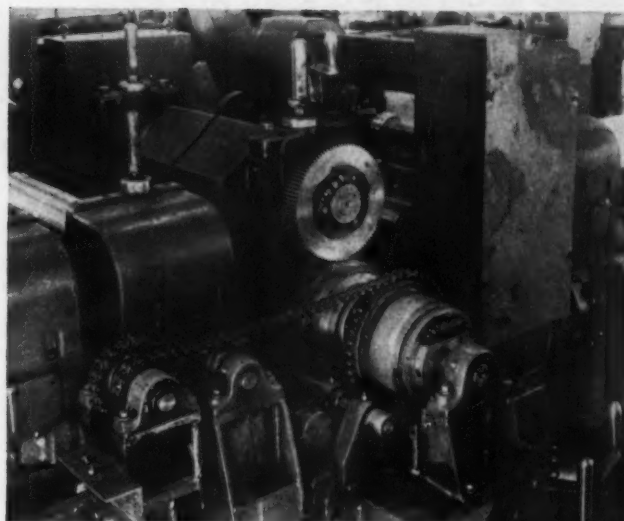
► One of the world's largest stove manufacturers reported that August was its first profitable month this year. Several stove makers so badly guessed the demand now facing them that they are going to have trouble catching up and will lose sales because of it. In this, as in other appliance lines, the sales problem is going to get more attention from now on.

► At least one major steel producer last week put cold-rolled sheets on an allocation basis—the same quota system used during the extreme postwar steel shortage.

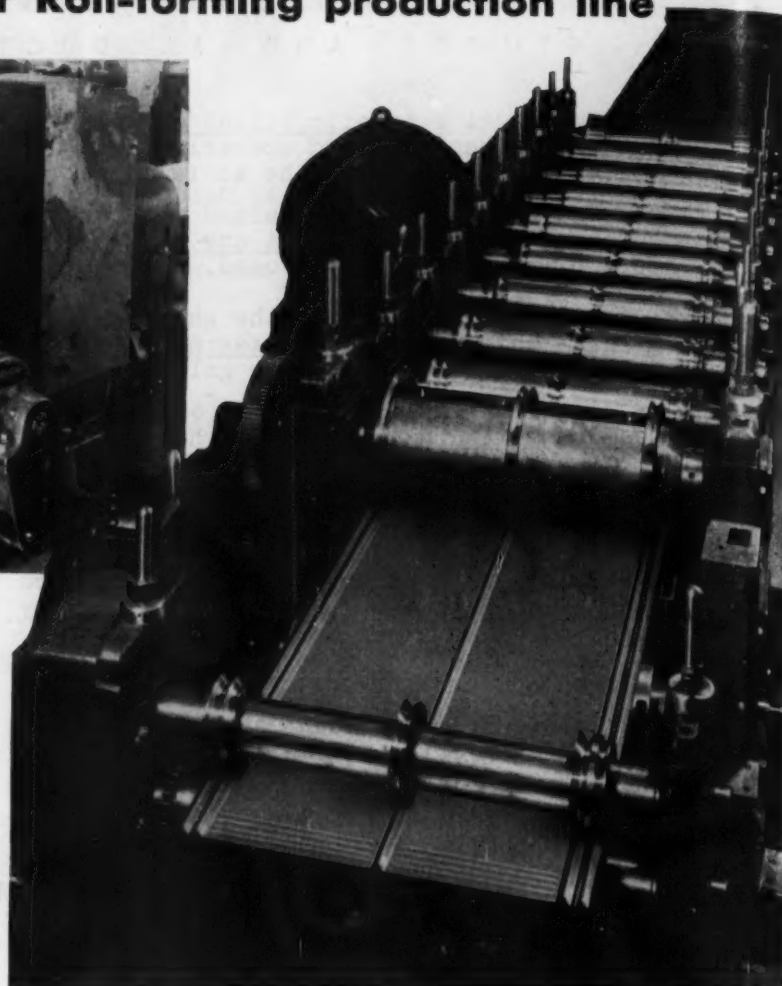
► Auto executives are still optimistic about the car market because: (1) With few exceptions cars are not piling up in dealers' hands; (2) installment buying is still under 70 pct of the total; (3) ratio of used car to new car sales is still below prewar and (4) price cutting has not yet become an important factor.

12 Examples of Economies Effected

by combining different operations in a
Yoder Roll-forming production line



NO. 5 Longitudinal forming; cross-crimping of ends; imprinting and consecutive numbering of each panel



These various operations are performed in a single pass through this Yoder roll forming machine. The imprinting and numbering device is mounted between two roll stands and is chain-driven from the regular transmission turning the rolls, as shown in inset at left.

A great diversity of other operations can be performed on Yoder roll forming machines, often without added labor cost or reduction of the normal output which is upwards of 30,000 feet per 8-hour day, with only one operator and a helper.

Thus different metals can be joined or combined; paper, felt or rubber inserted; adhesives or viscous fluids injected;

the strip can simultaneously be embossed, notched, perforated, coiled, curved, welded, seamed, etc., and finally cut to length—all automatically.

The Yoder engineering staff is at your service in figuring out how best to meet your regular or special needs, in respect to both machines and tooling, at the lowest possible cost.

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41 YEARS' LEADERSHIP • COILING • SLITTING • FORMING • EMBOSsing • CURVING • WELDING • CUTTING-OFF

Board Report Surprises Industry

Good Chance of Solution Seen

One Mill Allocating CR Sheets

The Iron Age

SUMMARY

IRON AND STEEL INDUSTRY TRENDS

THE moderate tone of the Presidential steel board report not only surprised the industry but practically eliminated the chances of a crippling steel strike. Still, all is not beer and skittles. Several knotty problems have to be resolved before steel labor peace is certain, although chances are excellent they will be solved quickly.

The industry won hands down on wages but lost its argument for contributory social insurance. It knew pensions had to come but the board's report may bring them more quickly. The board's recommendation—social insurance to cost 4¢ per hr per 2000-hr work year and pensions to cost 6¢ an hr on the same basis—is actually just about 5¢ per hr more than U. S. Steel either offered this year or has agreed to discuss. But most companies opposed non-contributory programs, or in fact any substantial cost increase at this time.

Stabilizing Effect on Buying Is Seen

It is too soon to say that the fourth round wage demand has been completely killed off. Because steel does not set the pattern this year does not mean others may not. But the odds have been sharply reduced. Even in steel, the stabilizing effect of a halt in annual wage increases is going to be felt in steel buying.

Steel ordering approached frantic proportions during the past 2 weeks. Perhaps a third to a half of it was strike hedging. The hedge buyers fell into two groups: Those who wanted steel shipped before what they then thought was the strike deadline and those who wanted to get on the books to be early in line if a strike came off. The latter group knew it could cancel its orders if there was no strike. Therefore, cancellations will be worth watching for the next few weeks. If the industrial scene settles down, as many expect it will, the people who bought as a hedge may be glad they are on the bandwagon.

Many steel mills shipped record tonnages during the past few weeks and, surprisingly, there was no shortage of freight cars. Order books

on cold-rolled sheets became so heavy that last week a big sheet producer put this item on allocation, the same quota system all mills were forced to adopt during the steel shortage.

Aluminum Sheet Buying Increases

Aluminum is another item that is beginning to repeat the 1948 pattern. The shortage of cold-rolled and galvanized steel sheets has intensified demand for aluminum sheet. Customers report average mill deliveries of 5 to 6 weeks but most warehouses have ample stocks. Cold-rolled strip steel has picked up. So have the number and size of orders for cold-finished bars, the first time this product has shown any signs of strength this year.

The past month has seen the evaporation of all depression chatter in Detroit. Pressure on suppliers there has been building up with orders now being placed for November and December steel delivery. Barring strikes, the feeling is that the talked-of drop in steel ordering there will not come off this fall.

Ingot Rate Up Slightly

The steel industry set up this week to operate at 85 pct of rated capacity. This compared with last week's revised rate of 84 pct of capacity which included some shutdowns for the Labor Day holiday. Early this week U. S. Steel blast furnaces in the Pittsburgh district were banked when it appeared that a strike threatened on the company's railroad could not be settled. When the strike was postponed on Monday they were brought back into operation.

Meanwhile the steel scrap market is on a rampage. Its antics and deals can only be compared to the frenzied buying of 1948 that grew out of the mad scramble for scrap for conversion deals—except that prices and tonnages are much lower. Prices shot up at Pittsburgh this week and advanced in other markets too. No. 1 steel was \$3.50 a ton higher in Pittsburgh and \$1.00 a ton higher in Chicago and Philadelphia. This sent THE IRON AGE steel scrap composite up by \$1.83 to \$25.75 per gross ton, the biggest advance of the year.

HARPER

NON-FERROUS AND STAINLESS STEEL EVERLASTING FASTENINGS

have **13** advantages to **1** over common steel

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An amazing combination of advantages in favor of non-ferrous and stainless steel bolt and nut products over common steel at only a slight additional cost . . . in many cases only a fraction of a cent per piece.

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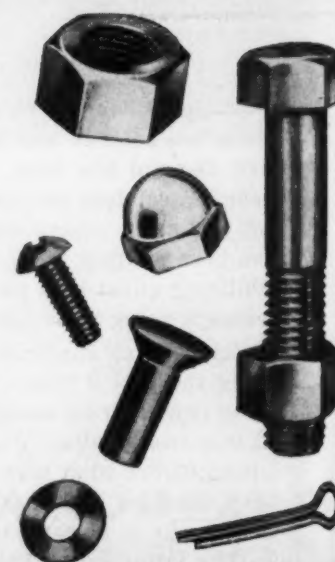
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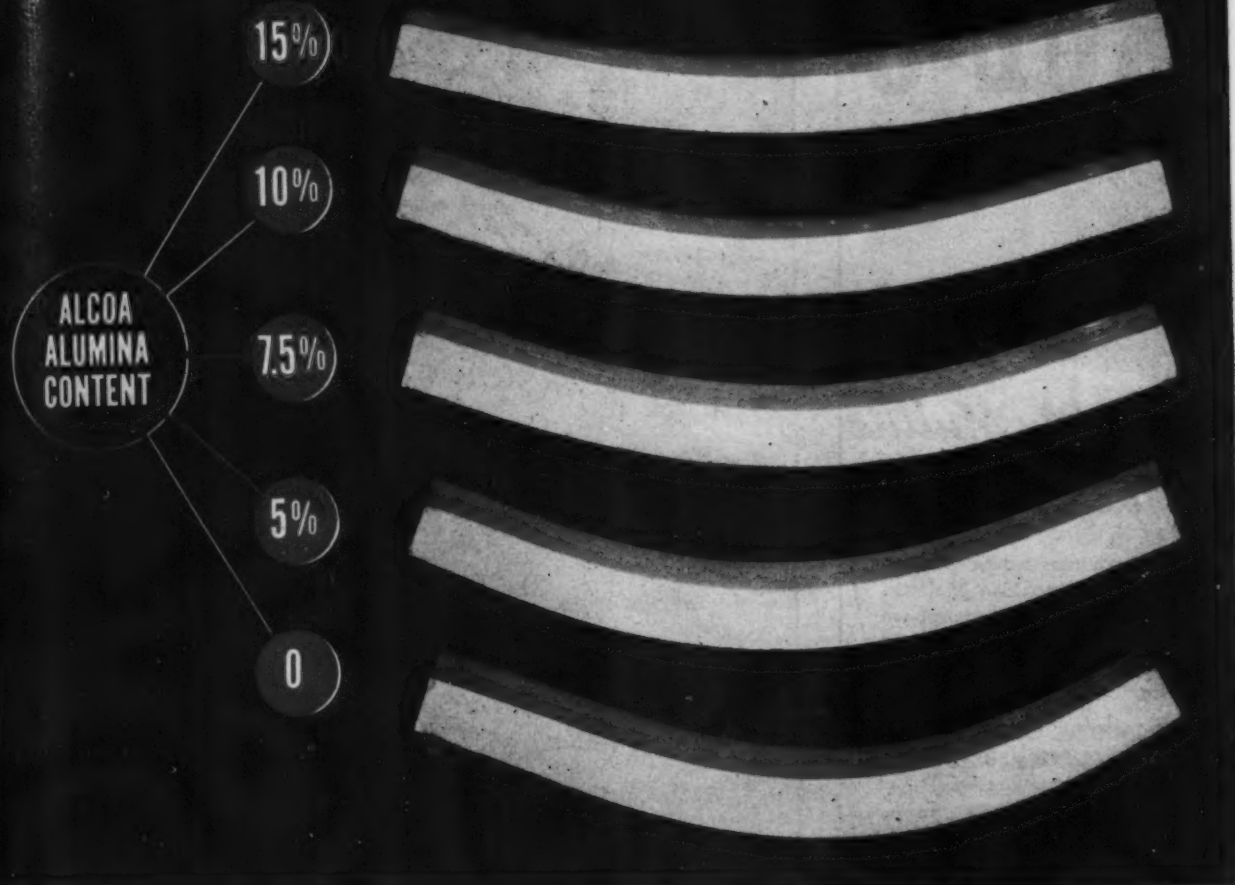
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EVERLASTING FASTENINGS



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THE IRON AGE



See what a difference a little Alcoa Alumina makes

Five of these ceramic specimens were fired at 2320° F. for about 30 hours. Cone 10 averaged 5 o'clock at the end of the firing. Yet look at the difference in deformation. The ALCOA ALUMINA content ranged from 0% (bottom specimen) to 15% (top specimen). The addition of 15% Alcoa Alumina resulted in a 38% decrease in deformation!

ALCOA ALUMINA adds strength to refractories, porcelains and other types of ceramic bodies. The more ALCOA ALUMINA you add, the higher the temperature a refractory can withstand. But even at "moderate" temperatures, a little ALCOA ALUMINA makes a marked difference, as shown by these test bars.

ALCOA ALUMINA improves refractories and other ceramics in a number of ways. It gives them:

- Better stability under load at high temperatures.
- Lower coefficient of expansion.

- Higher resistance to both thermal and mechanical shock.
- Negligible porosity and shrinkage.
- Better resistance to spalling at high temperatures.
- Better resistance to corrosive slags and gases.

WE DO NOT MAKE REFRACTORIES or other kinds of ceramics. But more and more, leading manufacturers are adding ALCOA ALUMINA to their mixes to improve the performance of such products.

We have considerable data concerning the value of ALCOA ALUMINA in ceramics. Some of this information may be of interest to you. Let us discuss it with you. Write to ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 1781 Gulf Building, Pittsburgh 19, Pennsylvania.



ALCOA CHEMICALS

ALUMINAS AND FLUORIDES

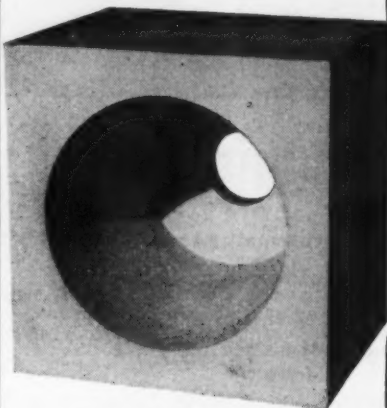
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Standard shapes carried in stock.

Special shapes made to your specifications.

*Dependable
Refractories*

REMMEY

RICHARD C. REMMEY SON CO.
Philadelphia 37, Pennsylvania



Fatigue Cracks

By *Charles T. Post*

Burr

"What constitutes a burr?" asks Joseph Anderle, director of research and development, Lorentzen Hardware Manufacturing Corp.

"Although we have been in the metal stamping business for over 40 years and have made millions upon millions of stampings, we were suddenly stumped when the question was asked us.

"We were under the impression that the sharp edge which is left when metal is cut by a die in good condition is not a burr. The die naturally should be sharp with a proper clearance for a particular gage, temper, and type of metal, for which there are any number of charts and formulas available. Off hand it would seem that the burr should not appear until the dies are dull or sheared—but just where is the dividing line?

"With the amount of information that passes through your hands and the number of experts that you are continually in contact with, we thought that truly you would have the answer. It certainly will be interesting to learn what the other opinions and definitions are relative to the term 'burr'."

Lorentzen, being expert at the stamping game, obviously never encounters any burrs and tosses the question, like other theoretical matters, over to the director of research. Here at your f.f.j., we waited until the brains department had settled down after vacations before tossing the question.

"A burr," opined the brains department, with its mind obviously still in the fields and forests, "is a malignant seed pod that sticks to your pants as you walk past. Now, take my cocker spaniel . . ."

Not getting anywhere there, we consulted a 700-page tome entitled "The Metallurgy of Deep Drawing and Pressing" by J. Dudley Jevons, Ph.D., B. Sc., A.I.C. The British, being purists in the matter of speech, would surely have an "it" for the word.

Jevons' precision of definition extended through "wrinkling," "puckering," "scoring," "galling" and "ears," but we couldn't pick up a single burr until page 93, under "Troubles Attributable to Unsatisfactory Blanking." There Jevons, probably suspecting an ambush, ducked the definition. He told when and how, but not what.

"If the blanking tools are blunt, incorrectly set, or have a clearance unsuited to the particular gage and also to the particular metal which is being blanked, a severe burr or lip may easily be formed on the edge of the blank sent to the press-shop. This burr is seldom noticed; when it is, its importance is rarely appreciated."

Then he adopted further evasive tactics, finally hiding behind a graph and an extensometer curve.

If there are any experts in the audience who have been face to face with a burr, Reader Anderle would like to hear from them. No botanists need apply.

Turn to Page 206

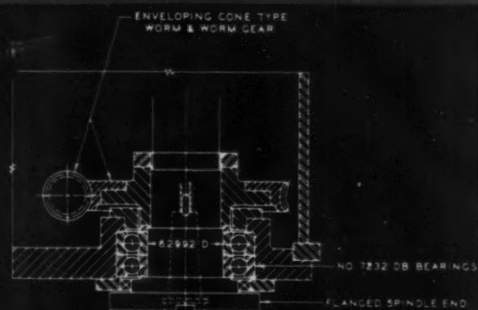
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Cross Feed Facing On Axle Housings

WITH BAKER VERTICAL BORING MACHINE

Faster, more accurate cross feed facing of the banjo surfaces on axle housings is performed in two operations with the Baker 30 HO-4 heavy duty boring machine. In this application the machine is equipped with two cross feed tool carriers that automatically feed carbide tipped cutters across the work. The head is hydraulically fed downward to a positive stop, at which time the tool carriers are automatically fed out across the work. The head is then returned to the upward position and the tool carrier withdrawn to the starting position. Clamping of part is Air Actuated while leveling of the banjo surface is rapidly accomplished through use of two adjusting knobs on the front of the fixture.

The Baker 30 HO-4 boring machine may also be adapted to simultaneous boring and facing operations. Write Baker today concerning your specific problem.



PARTIAL SECTION VIEW OF
EXTRA HEAVY DUTY HEAD ON SADDLE OF
30 HO-4 MACHINE
NOTE LARGE DIAMETER SPINDLE
AND
LOWER POWERFUL SMOOTH DRIVE

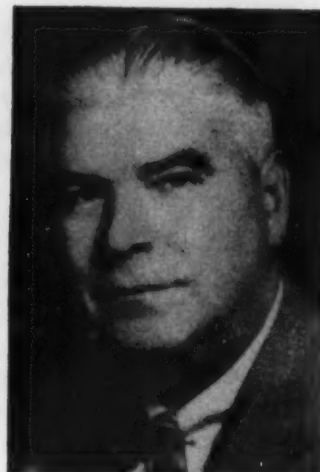
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DRILLING . . . TAPPING . . . KEYSEATING . . . CONTOUR GRINDING MACHINES

Iron Age *Introduces*



J. L. NEUDOERFER, executive vice-president, Wheeling Steel Corp.



N. C. REED, vice-president in charge of sales, Wheeling Steel Corp.



W. M. HALL, general manager of sales, Wheeling Steel Corp.

J. L. Neudoerfer has been elected executive vice-president of **WHEELING STEEL CORP.**, Wheeling, W. Va. **N. C. Reed** succeeds him as vice-president in charge of sales, having previously served as general manager of sales. **W. M. Hall**, formerly assistant general manager of sales, succeeds Mr. Reed as general manager of sales.

Robert L. Craig has been promoted as supervisor of employment in the Youngstown area of **THE YOUNGSTOWN SHEET AND TUBE CO.** Mr. Craig, who joined the company's employment department as a clerk in 1939, was made supervisor of apprentice training when the company inaugurated its apprentice training program last year. **David H. Goodfellow**, member of the company for 18 years, has been appointed assistant district sales manager of the Detroit office. Mr. Goodfellow was formerly with the sales staff of **Follansbee Steel Corp.**

John D. Tebben has founded **THE JOHN D. TEBBEN CO.** at Detroit, to function as management consultants. The company will also serve as sales representative of **THE GAS MACHINERY CO.**, Cleveland, for the Detroit and Michigan area. Mr. Tebben and his staff have their background in the metallurgical field, particularly as related to the automotive, aviation, and electrical industries. Before organizing his own company, Mr. Tebben was general sales manager for the **P. R. Mallory Co.**, metallurgical division, and vice-president of its subsidiary company, **S-M-S Corp.**

Frank W. Blanchette has been appointed representative of **THE SHEFFIELD CORP.**, Dayton, Ohio, and its subsidiary, the **Murche Machine and Tool Co.**, Detroit, for the territory that includes Greater New York City and a large portion of New Jersey.

Clyde L. Hassel has been elected a director and president of the **Pittsburgh Engineering and Machine Co.**, a subsidiary of **PITTSBURGH STEEL FOUNDRY CORP.** Mr. Hassel has been vice-president in charge of sales and engineering of the corporation and will continue in this capacity along with his new duties with the **Engineering and Machine Co.** He has been with the corporation for over 25 years, serving in production, engineering and sales.

R. J. Caccavelli has become manager of the Chicago sales office of **THE SUPERIOR ELECTRIC CO.**, Bristol, Conn. He has been employed by Superior for the past seven years, working in the engineering, sales and service departments. Prior to his association with the company he was an instructor in the electrical and drafting departments of various eastern schools.



JOSEPH H. PARSONS, vice-president, brake shoe & castings division, American Brake Shoe Co.



ROBERT B. POGUE, vice-president, brake shoe & castings division, American Brake Shoe Co.



FRANK W. GODSEY, JR., manager, special products development division, Westinghouse Electric Corp.

Joseph H. Parsons and Robert B. Pogue have been made vice-presidents of the brake shoe and castings division of AMERICAN BRAKE SHOE CO., New York. Mr. Parsons, formerly assistant vice-president, will be in charge of miscellaneous castings sales. He joined the company as an apprentice in 1913. Mr. Pogue, formerly chief engineer, continues in charge of engineering. He has been with the company since 1916 and chief engineer of the division since 1937. Rosser L. Wilson becomes chief engineer, having previously acted as assistant to Mr. Pogue. Mr. Wilson entered the company as an engineer in 1935.

Charles H. Goddard is the new manager of utility sales for SYLVANIA ELECTRIC PRODUCTS, INC., New York. Mr. Goddard joined the corporation in 1944 as merchandise manager of the fluorescent fixture division. Prior to that he served as vice-president of the Pittsburgh Reflector Co., with which he was associated for 14 years.

A. P. Schmauch is now manager of industrial engineering at ROCKWELL MANUFACTURING CO., Pittsburgh. Prior to joining Rockwell, he spent several years with Albert Ramond and Associates as a consulting production and industrial engineer. He was formerly associated with Armco Steel Corp. and Republic Steel Corp.

A. H. Loux has been made manager of distributor sales for FLEXIBLE TUBING CORP., Branford, Conn. He joined the corporation as direct factory representative for northern New York and adjacent territory.

Walter F. Nicoden has been transferred by U. S. STEEL CORP's Carnegie-Illinois Steel Corp. to the Youngstown, Ohio, District. Works as assistant general superintendent. Prior to this move, Mr. Nicoden held the same position at Edgar Thomson Works, North Braddock, Pa. He will be succeeded there by Edward J. Parsons, who has been superintendent of steel production at Youngstown. Mr. Parsons started with Carnegie-Illinois at Vandergrift, Pa., in 1922.

Henry N. Muller, Jr., manager of the educational department of Westinghouse, has been named assistant to vice-president in charge of engineering. Mr. Muller is author of many technical papers and articles and holds patents in the field of central station installation and operation. G. L. MacLane, Jr., has been appointed manager of the engineering laboratories of Westinghouse, to succeed Thomas L. Spooner, who has retired after 40 years of service with the corporation. J. C. Fink, formerly manager of the industry engineering department, has become assistant to vice-president in charge of engineering. Mr. Fink entered the corporation in 1928 as a member of the industry engineering department's marine and aviation section.

Isham Keith has been promoted to machinery manager of the New York branch office of the Pratt & Whitney Division, NILES - BEMENT - POND CO. of West Hartford, Conn. He succeeds Harold F. Welch in that position. Mr. Keith has been with the company

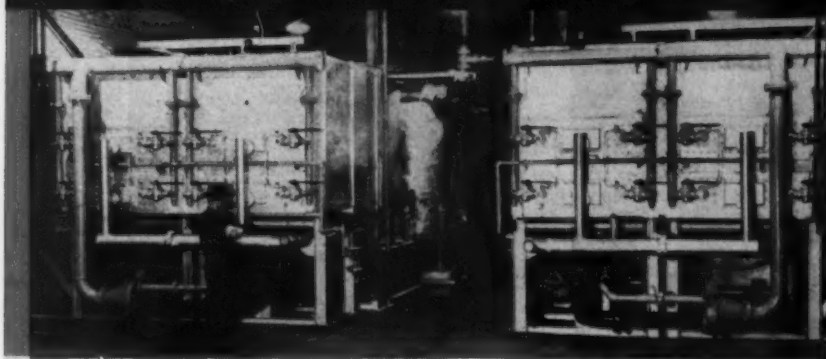
Turn to Page 134

Frank W. Godsey, Jr., will head the newly formed special products development division of WESTINGHOUSE ELECTRIC CORP., Pittsburgh. Mr. Godsey holds more than 40 patents covering the invention of electrical and mechanical devices. He joined the Westinghouse new products department in 1940.

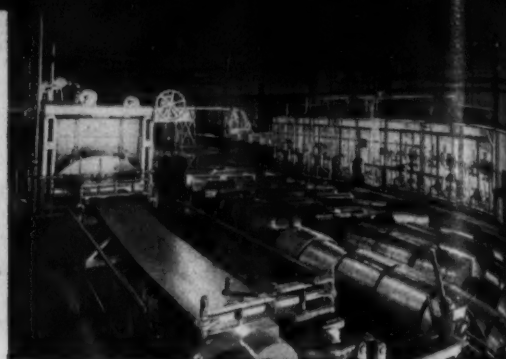
Edgar E. George joins THE BAKER-RAULANG CO., Cleveland, as district sales representative of the Baker Industrial Truck Division, with headquarters at High Point, N. C. In this capacity Mr. George will serve as material handling engineer for Baker truck applications and will handle the sale of the equipment.

Phil Sprague, Jr., is the new advertising manager of THE HAYS CORP., Michigan City, Ind. He succeeds Frederick I. Lackens, who will retire October 1.

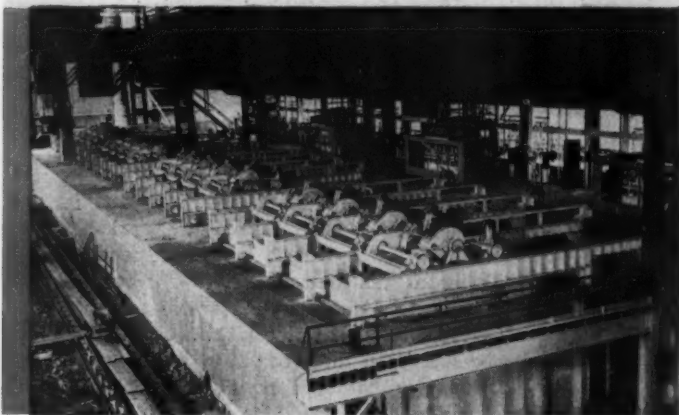
dependable, economical



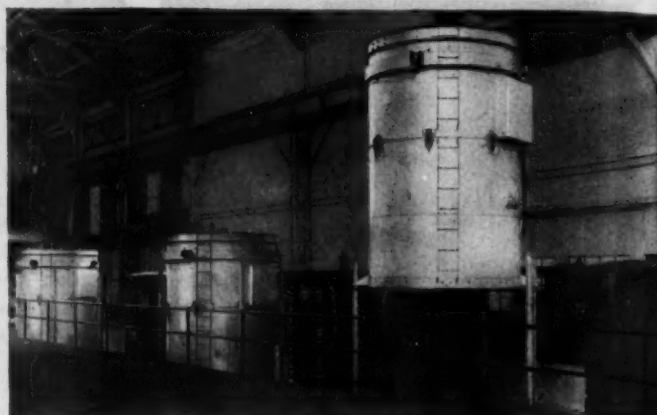
*Prepared Gas Atmosphere Generating Equipment
(RX, AX, NX, DX, HNX, and Char-Mo Gases)*



*Continuous-type, Controlled Atmosphere
Annealing and Normalizing Furnaces*



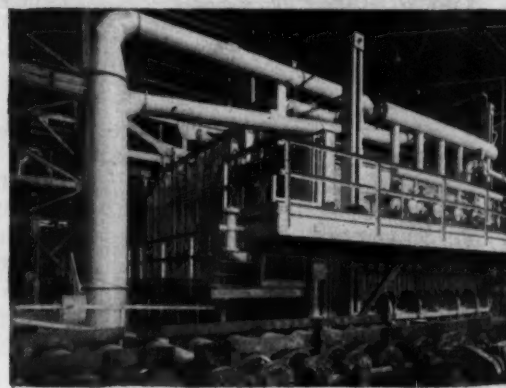
One-Way Fired Soaking Pits



*Controlled Atmosphere Annealing Covers
for wire and rod*



Continuous Furnaces for heat treating of steel plate



Slab Heating Furnace

Surface

**SERVES THE
STEEL
INDUSTRY**

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PRODUCTS COMPANY

this Baldwin
exceeds
expectations!"

An important producer of all types of industrial sheet-metal and fabricating work on both short-run and high production schedules, the Cutler Metal Products Company regards its Baldwin 300-ton Hy-speed Hydraulic Press as "one of the finest pieces of equipment in the plant". Since the facilities include a complete tool and die shop, welding equipment of all types including automatic arc, shearing and braking facilities to handle plates up to 12' wide x $\frac{3}{4}$ " thick, and press equipment ranging from 10-ton units up, all modern and efficient, this tribute to the Baldwin press is particularly impressive and significant.

Some of the many products which the Baldwin Press helps to produce at top speed and rock-bottom cost are illustrated at right.

Mr. Abraham Z. Cutler, vice president, stated that the Baldwin unit had "more than lived up to expectations, and completely justified every claim". In reviewing the features of the press, he pointed out the following as making vital contributions to the sustained production records established by the unit.

1. *Controlled pressure* on the work, based on the resistance of any one point.
2. *Die interchangeability*, because of the absence of a fixed working stroke.
3. *Complete control of the slide* at every portion of working and return stroke, insuring a more uniform product.
4. *The small number of moving parts* and the straight-line motion of the ram, free from heavy side thrusts. This helps to hold maintenance to a minimum.

Cutler is just one of a number of progressive metal working organizations that have found the key to better, faster, more profitable production in a Baldwin Hydraulic Press. Ask for Bulletin 160—and ask, also, for a representative to call and discuss your press requirements with you.

The Baldwin Locomotive Works, Philadelphia 42, Pa., U. S. A. Offices: Boston, Chicago, Cleveland, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Washington. In Canada: Baldwin Locomotive Works of Canada, Ltd., Toronto, Ontario.

BALDWIN

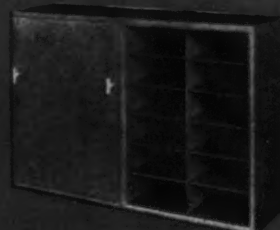
HYDRAULIC PRESSES



Large Cabinet



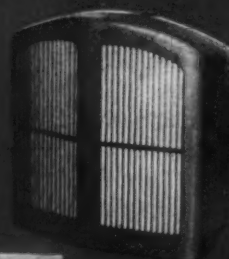
Television Relay Cabinet



Cabinet



Radiator Shell



Front tender and slide pan



Large tender and fuel box



Locomotive and DeBaker



GLOBAL LETTER

REVIEW OF WORLD MARKETS

Private enterprise can extract 10 million tons of Brazil's iron ore annually . . . German competition expected in world markets . . . New solutions to dollar deficits sought.

Sao Paulo—Investigations carried out by a Brazilian government commission indicate that 10 million tons of iron ore can be extracted annually by private enterprise from deposits in the Lafayette district of Minas Geraes. To be exported the ore would have to be carried by the state-owned Central of Brazil Railway to the port of Rio de Janeiro. This would cause congestion on the already over-loaded suburban section of the line.

The commission therefore recommend building a new port at Itacurussa in the state of Rio de Janeiro. The new port would be connected by rail with Japeri, formerly known as Belem, on the Central of Brazil Railway. The ore trains from Minas Geraes would be diverted there to the branch line for Itacurussa, which would be built and exploited by the C.B.R.

Cost Is Estimated

According to present plans the ore ships, on the return trip will carry coal to be landed at Itacurussa,

Cost of building the line and port, including equipment and rolling stock comprising 120 diesel

engines and 3000 80-ton trucks, is estimated at \$50 million. The project was approved by the Joint United States-Brazil Technical Commission, but the Brazilian government was unable to obtain a loan in the U. S. to carry it out.

Washington Jafet, head of Mineracao Geral do Brazil, second biggest exporter of minerals in Brazil, then undertook the task of acquiring the necessary equipment. He was commissioned to contact industrialists abroad who would be willing to supply it within the next 2 years. Payment will be guaranteed by the Bank of Brazil and recouped in 5 years by a tax of \$2.00 per ton on ore exported.

Mr. Jafet has left for Belgium where he hopes to persuade the government to facilitate the manufacture of the equipment for export by Belgian firms. He is prepared, however, to deal with manufacturers in any other country who will agree to the Brazilian government's terms.

Mr. Jafet's company owns important ore deposits at Lafayette and in the neighborhood of Brumadinho. He believes that with the collaboration of the many small mines in the district he can increase output to 10 million tons

annually. He also owns blast furnaces in the State of Sao Paulo, which he is preparing to expand.

Freight Is Fixed

According to a decree issued by ex-President Getulio Vargas to assist the national steel mill at Volta Redonda, the freight on iron ore is fixed and may not be raised. It is about one-fourth of that on pig iron.

Brazil's 5-year plan, better known as the Salte Plan, is now receiving its final amendments in the Senate. After that it will be returned to the Chamber of Deputies for approval. The section dealing with transportation provides for an expenditure of \$5 million for enlarging and equipping the port of Victoria, Espirito Santo. It is through this port that ore from the Vale do Rio Doce mines is exported.

German Competition May Be Felt In World Markets Soon

London—A moderate increase in German competition in steel export markets may be expected in the next few months. This is the view of steel men here.

It is believed that there will be increased pressure on the military government and the German Economic Administration to increase the quotas for export. The reasons can be anticipated: (1) The need to increase export earnings, (2) growing unemployment at home, (3) falling order books and (4) desire of the steelmakers to re-

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Engineering News

ON ABRASIVE PRODUCTS

Belt Backstand Idler Techniques Effect Operating Cost Reduction

Substantially increased output, lower unit costs and improved finishes are influencing more metal working plants to switch to belt backstand idlers for grinding and finishing flat and contoured surfaces of both small and medium weight pieces. In many factories where set-up wheels were formerly used, conversion from 25 to 100% to the backstand technique has been effected. While these methods normally involve grinding speeds of 6500 to 7000 SFPM with glue-bonded abrasive cloth belts, speeds of 10,000 SFPM are being used widely today with resin bonded belts.

As a result of recent wide-spread experiences with belt backstand idler techniques, our trained staff of engineers is equipped to guide users in making the best use of this equipment. In all cases they are able to recommend applications and abrasive materials to meet your requirements.



Better Work with Cylindrical and Crankshaft Grinding

Cylindrical grinding wheels including crankshaft wheels by CARBORUNDUM are engineered to provide the tools required for maintenance of efficient production rates, rapid stock removal and fine surface finish.

V11 bond represents the most recent contribution to this class of grinding. These wheels are designed with a *specific structural balance* which when combined with the proper grain size and abrasive type offers the following advantages to both operator and management:

1. Cool and free cutting characteristics promote more efficient production of superior finishes and close tolerances. This is of great importance in operations involving both OD and shoulder or face grinding.
2. Designed structural balance permits continuous fast cutting rates which promote high production.
3. Fast cutting qualities combined with long life save dollars in operator and machine time as well as abrasive costs.
4. Engineered uniformity of the abrasive and bond components of these wheels permits close control of part size and form.
5. Self dressing characteristics provide longer periods of use between dressings... save dressing time, usable abrasive and dressing tools.
6. Ability to grind a wide range of materials makes possible savings in inventories of special wheels and minimizes requirements for premium priced abrasives.
7. Savings in set-up time are made possible because the versatility of V11 bond wheels permits efficient grinding of many varieties of work, making it unnecessary to change wheels when changing from one job to another.

For prompt attention to abrasive problems, call your nearest branch office of The Carborundum Company.



COATED PRODUCTS

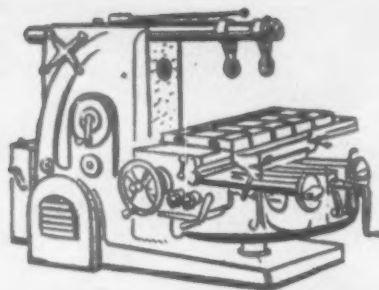
SHEETS • ROLLS • BELTS • DISCS
SPECIAL SHAPES

BONDED PRODUCTS

ABRASIVE WHEELS • STICKS, STONES AND RUBS • SPECIALTIES • SUPERFINISHING STONES • SPECIAL FORMS • ABRASIVE GRAINS AND FINISHING COMPOUNDS



FOR EVERY ABRASIVE APPLICATION
... CALL IN
CARBORUNDUM
TRADE MARK



MACHINE TOOL

High Spots

SALES, INQUIRIES AND PRODUCTION

Cleveland—Registering a sharp rebound over the July postwar low, machine tool orders increased 10 pct and shipments 15 pct in August, according to preliminary reports from authoritative sources in the trade.

Foreign orders are expected to be about double the July total for the industry. Cancellations were down, backlog of unfilled orders is down as the industry's shipments were higher than its orders, except for foreign business, where August orders were higher than the shipments.

Foreign Outlook Bright

Trade sources see the August pickup as the start of a gradual upturn in the machine tool business which should reach a peak in October and perhaps remain on a high plateau throughout the fall.

Some segments of the industry feel that foreign business will be a profitable sphere of activity during the fall. Generally it is still too early to get the fall programs of the major foreign customers, although France's program is due any time now, as is that of the Dutch. Sweden's program is not expected to break until some time in January. Some com-

by

William A. Lloyd

Machine tool executives say that outlook is not good . . . Big orders for replacement not in sight.

panies in the industry report orders from Germany, mostly for special machines, as the Germans are beginning to make their own standard general purpose equipment again.

Domestic Business Spotty

Fiat, of Italy, placed a sizable order last week with several companies, ordering some automatics, tapping machines and some balancing machines. According to reports, there were about 40 automatics on the order, 12 of which went to the British and 38 to U. S. builders.

In the domestic market, the

business continues to fluctuate from week to week and company to company. In one area, dealers are quoting less than they were two or three weeks ago. In another, the volume of inquiries has increased. But the general undertone continues to gain strength.

In Cincinnati, Lodge & Shipley Co. has notified its dealers and distributors that it will no longer build the Acme turret lathe. Lodge & Shipley bought the Acme Machine Tool Co., Cincinnati, in December, 1946.

Detroit Pays Dividends

In Detroit the impression is growing that persistent campaigns by tool suppliers to convince manufacturers that tools may become obsolete long before they wear out appears to be bearing fruit.

One car manufacturer has followed an interesting approach, listing all machines by age groups. After completing the list, other factors that might have a direct bearing on tooling decisions were carefully analyzed—improved efficiency and accuracy of new tools—potential decrease in floor space—improved labor efficiency and maintenance expense. In some instances it has been found that savings in maintenance alone will amortize a substantial part of the investment required to purchase the new machines.

Hidden Expenses Noted

According to trade sources, one of the outstanding developments here is an increasing consciousness of the hidden expense burden of old tooling from a maintenance standpoint. As a result of careful studies of this subject, plans are now being made to systematically bring up to date all the ancient equipment in use in several plants. Some sources here believe that an accurate and complete analysis of tooling expense, including all indirect costs, could result in a substantial increase in the number of new orders being written by the machine tool industry in this area.

The automatic transmission has also driven home the necessity for careful planning of tooling for this item.

broaching will really save you money on those close tolerance high speed internal gears

HERE'S AN ACTUAL CASE:

The Old Production Line-Up

1. Rough Broach
2. Shape
3. Shave

Required Tolerance .0002"

The Way It's Handled Now

1. Rough Broach
2. Finish Broach

Required Tolerance .0002"

EQUIPMENT USED:

- 1 Broaching Machine
- 18 Gear Shapers
- 2 Gear Shaving Machines

4 Broaching Machines

These are actual figures from a well known automotive gear plant which adopted the all-broaching procedure about 2 years ago. Since then savings have been spectacular.

Of course they don't use the garden variety of broaches. The savings and precision achieved would not be possible with ordinary tools.

This plant uses NALOY BROACHES each of which is good for 38,000 gears before it is retired. Naloy broaches have characteristics (and we can prove this) that the average broach shop just doesn't have the facilities to duplicate.

If you want Precision with maximum economy, send for a Red Ring Broach Engineer.

SPUR AND HELICAL
GEAR SPECIALISTS
ORIGINATORS OF ROTARY SHAVING
AND ELLIPTOID TOOTH FORM

NATIONAL BROACH AND MACHINE CO.

3600 ST. JEAN • • • • • DETROIT 13, MICHIGAN

WORLD'S LARGEST PRODUCER OF GEAR SHAVING EQUIPMENT

FREE

USE THIS POST CARD



PUBLICATIONS

New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.

Surface Grinders

Bulletin describes recently acquired line of rotary type surface grinders and gives outstanding features and advantages gained from use of such equipment. *Mattison Machine Works.* For more information, check No. 1 on the postcard.

Small Tubing

Small size tubing, from 0.010 to 0.500 in. OD and available in round, rectangular, oval or square shapes, is described in 4-p. bulletin. *Precision Tube Co.* For more information, check No. 2 on the postcard.

Buckets and Grapples

Described in booklet are various clamshell buckets and grapples. Also included are construction features, dimension drawings and list of accessories. *Owen Bucket Co.* For more information, check No. 3 on the postcard.

Core Ovens

Shown in 6-p. bulletin are core and mold ovens including portable, rolling drawer, horizontal, continuous and rack and car types. *Foundry Equipment Co.* For more information, check No. 4 on the postcard.

Hoists and Trolleys

Hoists and trolleys are described in catalog No. H449 which lists features, advantages, parts and accessories.

Price list is also included. *Chester Hoist Div., National Screw & Mfg. Co.* For more information, check No. 5 on the postcard.

Safety Clothing

Safety clothing for protection of eyes, hands and body are featured in folio. Shown are goggles, gloves, jackets and aprons. Included is a list of welding safety supplies. *Kimball Safety Products Co.* For more information, check No. 6 on the postcard.

Contract Manufacturing

Contract manufacturing facilities described in 32-p. booklet include machine shop, pattern shop, forge shop, foundry, plate shop, fabricating shop, inspection and engineering dept. *Stearns-Roger Mfg. Co.* For more information, check No. 7 on the postcard.

Protective Coatings

Bulletin gives information on 4 groups of coatings developed for corrosion control of internal and external surfaces. Included are data and cases where coatings have been used to advantage. *United Chromium, Inc.* For more information, check No. 8 on the postcard.

Speed Control

Remote, stepless speed adjustment and control for fractional hp motors by an electronic control is described in bulletin No. 860. Control useful for machine tools, paper and textile machinery, mixers and conveyers. *Brown-Brockmeyer Co.* For more information, check No. 9 on the postcard.

Abrasion Resistant Alloy

Abrasion resistant alloy, its advantages and limitations, its physical properties and examples of application are described in 6-p. folder. *Electro-Alloys Div., American Brake Shoe Co.* For more information, check No. 10 on the postcard.

Refractory Brick

Bulletin describes mullite bonded refractories, gives properties, advantages gained from use of such material and typical applications. *Chas. Taylor Sons Co.* For more information, check No. 11 on the postcard.

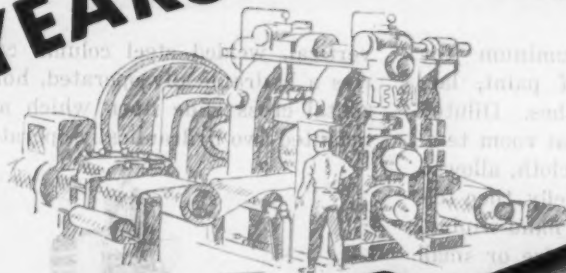
Retaining Rings

Series of charts gives engineering data and specifications for use of internal type, inverted retaining rings.

Turn to Page 149

OVER 90

YEARS EXPERIENCE



PLAIN CHILLED IRON ROLLS



MOLYBDENUM CHILLED IRON ROLLS



..... for the manufacturing,
machining and grinding of all types of

ROLLS

**FOR ROLLING STEEL AND
NON-FERROUS METALS**

MANUFACTURERS OF
ROLLS AND ROLLING MILL MACHINERY
FOR THE IRON, STEEL AND
NON-FERROUS
INDUSTRIES

"X" AND "XA" ROLLS
(Alloy Grain Type)



SUPERIOR "X" ROLLS
(Nickel Grain Type)



SPECIAL PROCESS ROLLS
(Chill and Grain Type)



ATLAS AND ATLAS "B" ROLLS
(Alloy Grain Type)



AJAX DUPLEX ROLLS
(High Alloy Grain Type)



CLIMAX AND AJAX ROLLS
(High Alloy Grain Type)



SPECIAL TUBE MILL ROLL

LEWIS FOUNDRY AND MACHINE DIVISION
of BLAW-KNOX COMPANY • PITTSBURGH, PA.

NEW

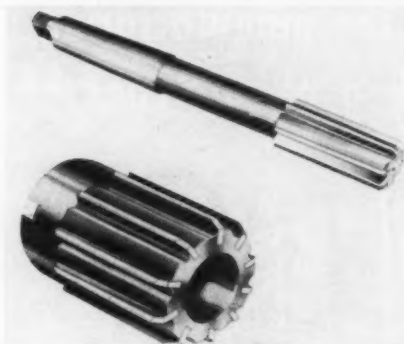
PRODUCTION IDEAS

Continued

rous metals and aluminum for sure-grip adhesion of paint, lacquer, and enamel finishes. Diluted solutions are applied at room temperature by brush or cloth, allowed to soak on surfaces briefly, then followed by rinsing and hand-wiping. For washing medium-size or small parts, the solutions may be used in tanks or in acid-resistant washing machines at working temperatures of approximately 140°F. Water rinsing and quick drying complete the cleaning - conditioning cycle. *Oakite Products, Inc.* For more information, check No. 30 on the postcard on p. 35.

High-Speed Reamers

High speed reamers are now made by a new rolling process that secures cutter blades of high speed steel in recesses of a low carbon steel tool body. This rolling process

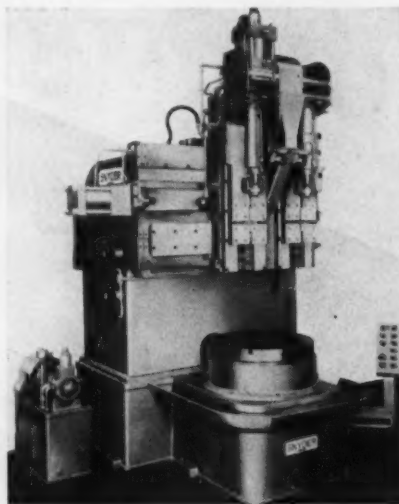


involves no application of heat. A re-rolling and sharpening at the factory will restore worn and undersized reamers to new sharpness and original diameter. Standard reamers range up to 6 in. diam. Step-reamers and specials can be built to specifications. *Halsey Products Co.* For more information, check No. 31 on the postcard on p. 35.

Vertical Lathe

By changing fixtures and tool holders, facing, boring or turning large workpieces can be done with carbide tools on a special heavy-duty, vertical hydraulic lathe. The

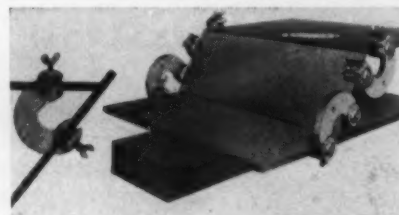
vertical, welded steel column carries a hydraulically operated, horizontal cross slide upon which are mounted two hydraulically operated



vertical tool slides, having T slots and keyways for mounting tool blocks and holders. The horizontal slide has 21 in. stroke; vertical slides have 14 in. stroke. A 30 in. variable speed rotating table mounted on the base in preloaded, Timken bearings is driven through spiral, bevel and helical gears. Power is supplied by a 15 hp motor. The drive is rheostat controlled and speeds from 46.5 to 185 rpm are available. *Snyder Tool & Engineering Co.* For more information, check No. 32 on the postcard on p. 35.

Welding Clamp

A protractor welding clamp holds plates, bars, and tubing, while parts are being united by welding,

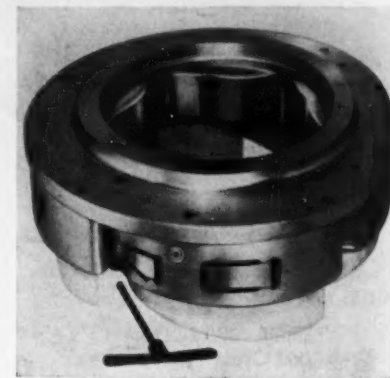


brazing or soldering. By the use of Pro-Clamps, piping systems and weldments can be completely in-

stalled and assembled before the first weld is applied. Special fixtures and templates can be eliminated in many cases. The clamps consist of a U-shaped frame at the ends of which are two clamps that grip and hold the parts in position for welding. So that clamps will hold the workpieces at any angle, they are rotatably mounted and can be pre-set at any angle from 0 to 180° by two protractor scales on the frame. Pro-Clamps are made of a lightweight high strength alloy that resists weld spatter. The clamp accommodates thickness and diameter from 0 to 1 in. *Bernard Welding Equipment Co.* For more information, check No. 33 on the postcard on p. 35.

Grinding Chuck

A new segmental grinding chuck is standardized so that two sizes of abrasive segments cover all grinding wheel requirements for vertical and horizontal spindle, face grinders. Sharp pointed segments are placed in circular echelon overlap formation and cut with a rapid sweeping action that throws out

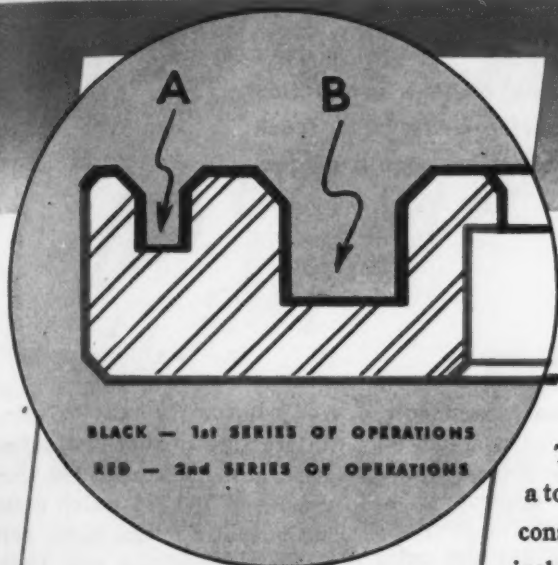
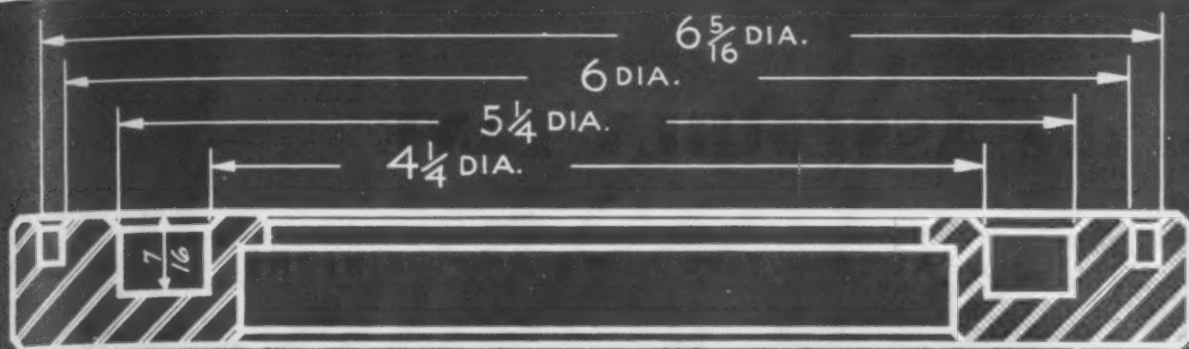


chips and dirt as the chuck revolves. On the production line the AA chuck is said to be giving up to 35 pct faster cutting action and improved finishes. Segment waste is reduced 20 pct by the segment holder design. *Abrasive Machine Tool Co.* For more information, check No. 34 on the postcard on p. 35.

Lathe Collet Chuck

A lathe collet chuck featuring a Rubber-Flex collet permits chucking close to the spindle nose, saving 1 to 1½ in. overhang. Composed of special Hycar synthetic rubber.

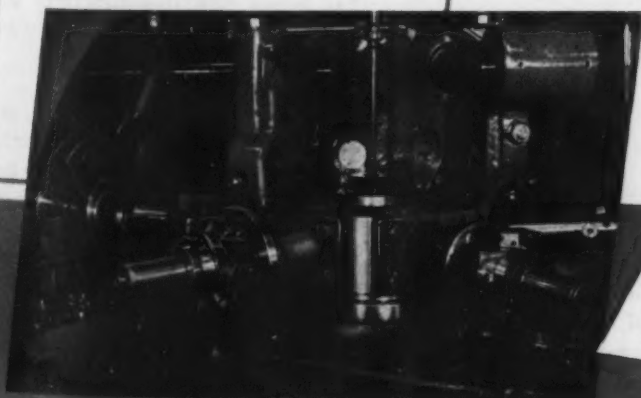
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BLACK — 1st SERIES OF OPERATIONS
RED — 2nd SERIES OF OPERATIONS

POTTER & JOHNSTON TOOLING SOLVED THIS "TOUGH ONE"

The close-up drawing clearly shows the amount of machining on this forged steel ring — 21 different operations. "A" refers to the trepanning cut from the 6 5/16" dia. to the 6" dia., and "B" points out the second trepanning cut from the 5 1/4" dia. to the 4 1/4" dia. Trepanning this amount of steel in one holding indicates how well P&J Tooling teams up with P&J Automatics to combine operations, combine cuts and reduce machining time. Close-up of the P&J-designed trepanning head on the 5D Power-Flex appears below.



**TO MAKE
IT PAY**

...CONSULT

P & J

The machining on this forged steel Ring job could make it a tough tool-engineering problem: there's considerable, time-consuming work to close tolerances on all faces on both sides, including two trepanning cuts.

Can any of these operations be combined to eliminate unnecessary work handling... can cuts be combined to reduce machine-handling time... can machining time be reduced to obtain the greatest possible production?

If the answers are "no", the problem remains a tough one. But the answers are all "yes", because the job is done with P&J Tooling on P&J Automatics — in this case, the 5D Power-Flex.

Practical-minded tool engineers look to P&J Specialized Tool Engineering for the answers to their production problems... get their recommendations on *your* tough work.

**P & J - PRODUCTION
TOOLING HEADQUARTERS**

**Potter &
Johnston Company**

Pawtucket, R. I.
subsidiary of Pratt & Whitney
Division Niles-Bement-Pond Company



On the ASSEMBLY LINE

AUTOMOTIVE NEWS AND OPINIONS

Auto industry establishes new all-time production record for passenger cars during August . . . Truck output lags . . . K-F decentralization move is unique.



by

Walter G. Pottner

Detroit—During September the automobile industry is holding to the same high level of production that enabled it to establish all-time production records in August. There are no indications that, barring interference as a result of strikes at Ford or in the steel or coal industries, the pace of passenger car production will be eased during the remainder of this year. Trucks, however, are quite another story as will be shown later.

For the first time since the war, the auto industry has been given its head with respect to raw materials and auto executives are determined to make the most of their present opportunities. This is clearly evident from the August production reports which are now available in preliminary form.

By resorting to double and even

triple shifts in some departments, the auto industry turned out an unprecedented 654,880 vehicles during August, according to "Automotive News." The previous all-time record of 621,910 units was set 20 years ago in April 1929. The August production total included 553,199 passenger cars, also an all-time high.

That this record was established in the face of shutdowns by Kaiser-Frazer, Nash and Willys gives ample evidence of the terrific pace set during the month by the General Motors divisions, Ford, Chrysler and Packard. Each of these firms reached a new all-time high during the month.

Fisher Body Sets Record

During August, Fisher Body turned out 249,378 bodies, easily exceeding the best previous monthly production record established in April 1941 when 214,000 bodies were built.

"Automotive News" figures show that Chrysler divisions produced 125,253 cars during August, or 22.6 pct of the industry's total. The Ford output of 120,849 cars equaled 21.8 pct of the total. The whopping GM contribution of 243,664 passenger cars is responsible for 44 pct of all passenger cars assembled.

Looking over the production

records for the year to date, it is interesting to note that during the first 8 months of 1949 Chrysler produced 730,186 units, exceeding its output for the same period a year ago by 32.5 pct. Despite a strike during May, Ford's output has jumped from 408,258 in 1948 to 705,436 in 1949, an increase of 72.5 pct. The GM total of 1,528,057 is 43.1 pct higher than a year ago. The passenger car industry as a whole has upped its production a substantial 36.9 pct over the 1948 figures.

As indicated earlier, however, trucks are an entirely different story. For some companies, particularly those specializing in the heavy duty field, 1949 has been a disastrous year compared with the fat years the industry has been enjoying since the end of the war.

Truck Production Lags

Taking the truck industry as a whole, 834,481 units were turned out in 8 months of 1949. This may be compared with 954,190 for the same period of 1948. Thus, the truck total has dropped 12.6 pct thus far in 1949. Three truck producers have actually exceeded their 1948 totals. Chevrolet is running 6 pct ahead of its 1948 schedules. Studebaker is 13.5 pct higher than a year ago. GM Truck output

*Accuracy
plus economy on
odd shaped pieces*

... on the Type "D" ...
BULLARD
MULT-AU-MATIC



REPETITIVE ACCURACY

of Multi-Au-Matics is well known throughout the Automotive and other fields, where these machines have proven their ability to lower manufacturing costs. Here this sixteen inch six spindle, Type "D" Multi-Au-Matic is shown at work on an odd shaped

piece. This is no problem, since work is chucked in a lying down position rather than hanging it up. Many other features of Multi-Au-Matics save time and lower manufacturing costs. Write for estimates on your work as applied to these machines. The Bullard Company, Bridgeport 2, Conn.



BULLARD

All in all - - - Use Bullards for manufacturing Economies.

is 4 pct greater than last year.

The rest of the truck industry, however, is lagging far behind last year. Federal truck assemblies have fallen off an estimated 66 pct; International is off 14.8; Mack is down 48.3; Reo is off 69.5; White is trailing its 1948 total by 34.1 pct and Willys has fallen off 52.7 pct in its truck department.

Auto Industry is Certain To Establish New '49 Records

Regardless of strike interference that may clip or seriously interfere with today's auto production rate, the year 1949 is certain to establish many new industry records. The latest issue of Automobile Facts and Figures, published by the Auto Manufacturers Assn., makes this abundantly clear.

For example, with U. S. vehicle production running 23 pct ahead of last year, the 1949 production could easily surpass the 5,358,420 units produced during 1929. The August production rate, for example, exceeded 7.5 million for the year.

Assuming production continues at about the present rate, the

number of cars on U. S. highways by the end of this year will have reached 43.5 million or 2½ million more than were reported last year. The 1949 registration figures are 8.7 million greater than the 1941 total.

According to AMA, U. S. motorists will drive 425 billion miles this year—exceeding by 92 billion the 1941 total.

The rise in truck use has been sharp, reaching an estimated 7.9 million by the end of this year. This compares with only 5 million commercial vehicles registered in 1941. The agency estimates that 5.6 million persons are currently employed in production, sales, servicing and operating commercial vehicles.

It is interesting to note the use of trucks on the farm has increased 60 pct since 1941 so that today more than 89 pct of all produce from the farm is hauled by truck to market. Only 11 pct of the farm output is going to market partly by rail or water. With another increase in freight rates just going into effect, one wonders how much a similar trend by industry away from railroad transportation will be accelerated.

Decentralization Trend Growing in Auto Industry

A trend toward decentralization has been observed in the automobile industry for years. General Motors has followed such a policy for a long time. Some sources claim GM will never again build a plant to employ more than 10,000 persons. Ford is moving rapidly in the direction of decentralization. The Canton Forge plant, leasing of the Naval Arsenal at Detroit, and, more recently, the establishment of a stamping plant in Buffalo are examples. The recent establishment of two GM plants in the Pittsburgh area are further examples. Last week Kaiser-Frazer released additional details on its ambitious decentralization plans which represent a unique approach to the decentralization problem.

New K-F Plant

During October, K-F is scheduled to open its Long Beach plant, tooled to assemble 20 cars a day from "bodies in white," frames, engines, transmissions and other parts shipped from Willow Run.

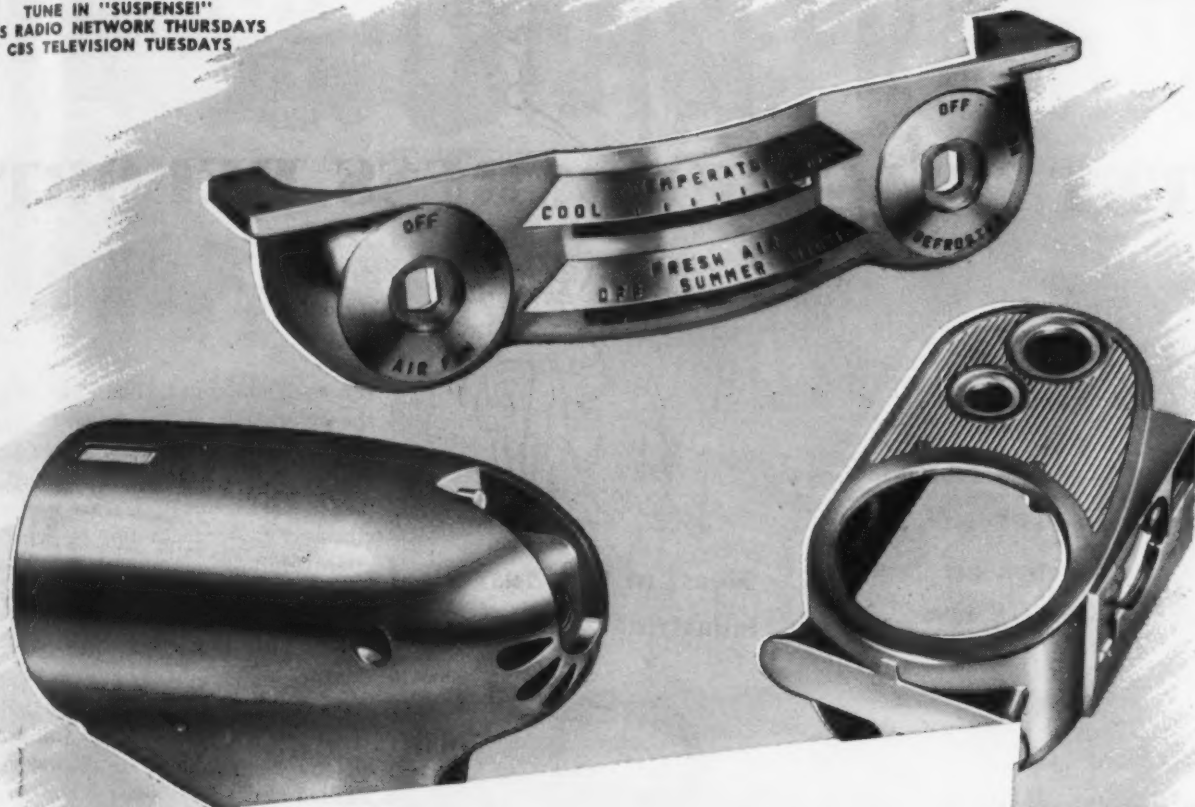
Edgar Kaiser, president of K-F, estimates it will be possible to ship 12 "bodies in white" for what it now costs to ship four completely assembled cars. Under the present scheme, K-F hopes some day to be able to ship carloads of fenders, panels, tops, etc., to a number of small feeder plants located throughout the country. The small plants would paint, upholster and trim the bodies and assemble the mechanical components. No more than 100 to 150 men would be employed in each plant.

K-F feels the possibility of improving its labor relations and community relations and promoting acceptance of K-F products will combine to make the program economically sound. The use of such small assembly plants has never before been attempted by the automobile industry and the K-F experiment will be followed here with a great deal of interest.



AFTER DARK: This night-view of the Chevrolet assembly plant in Flint tells why the automotive industry has been establishing new records during August. With night shifts added at several of its plants, Chevrolet turned out 163,346 passenger cars and trucks during August, an all-time record. The picture shows hundreds of new passenger cars awaiting shipment.

TUNE IN "SUSPENSE!"
CBS RADIO NETWORK THURSDAYS
CBS TELEVISION TUESDAYS



AUTO-LITE

DIE CASTINGS

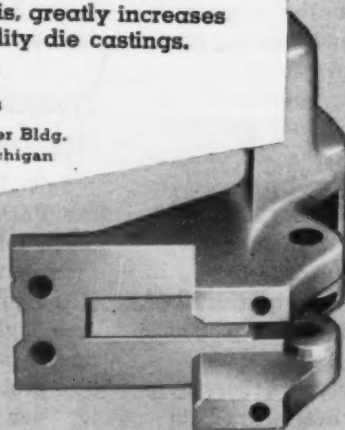
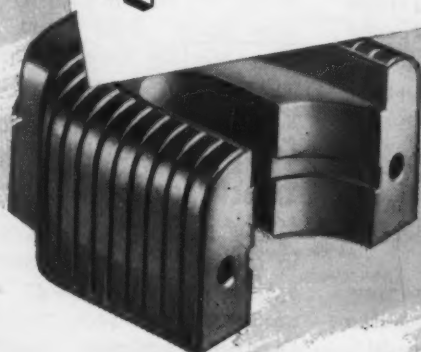
● Increased production facilities for die castings made possible through the famous Auto-Lite "controlled metals" processes are now available. The opening of the great new Lockland plant of Auto-Lite, combined with the enlarged facilities at Woodstock, Illinois, greatly increases Auto-Lite's ability to furnish high quality die castings.



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WEST COAST PROGRESS REPORT



**Bethlehem Pacific to fabricate
next to Isaacson at Seattle . . .**

**Declining production per man-
day shuts down Utah mines.**

Digest of Far West Industrial Activity



by

J. Reinhardt

Seattle—Bethlehem Pacific Coast Steel Corp. has purchased approximately 8 acres of land at 8531 E. Marginal Way, where they will immediately begin construction of a structural steel fabricating shop. It is expected that the new facilities will be ready for operation about Apr. 1, 1950.

This new fabricating unit in the Pacific Northwest, near the company's Seattle steel manufacturing plant will, when added to Bethlehem Pacific's other fabricating works located at Alameda, South San Francisco and Los Angeles, Calif., round out the company's steel fabricating and erecting operations on the Pacific Coast.

This land was purchased by Bethlehem Pacific from the Isaacson Iron Works. Isaacson officials state the property sold was surplus for its forging industrial tractor attachment and galvanizing operations at Plant 2, and that it still owns sufficient property south of Plant 2 for any future expansions that may be required.

During recent months there have been rumors that Bethlehem Pacific would buy the Isaacson structural plant. Neither firm has made a public statement on this possibility, and neither will state at this time if the purchase of this property ad-

jacent to the Isaacson plant is the forerunner of such a purchase.

Production Declines Per Man-Day In Utah Metal Mines

Salt Lake City—Shutdown of the Park City district nonferrous metal mines, and efforts to reopen them have brought to public attention a problem that has become increasingly burdensome to the industry since the end of the war. The problem is declining productivity per man day, despite large capital expenditures for mechanization.

Production at one major mine over a 5-year period during the 30's was 1.22 tons of ore per shift

for each employee. The rate when the operation closed recently was reportedly 0.6 ton and sometimes dropped to 0.5 ton. During the period the productivity rate was declining by approximately 50 pct the operation was completely equipped with shovel loaders, scrapers, storage battery locomotives and automatic powerdrills.

Mine managements have been reluctant to press the productivity issue because of the lack of competition for metal mining jobs. Skilled and experienced labor is required, but so few young people are coming into the industry that a mine manager has had to take the available supply and get along with the workers or shut down. When metal prices dropped the point was reached where some of them preferred to suspend operations.

Now the Utah state industrial commission, in attempting to get the operators and miners together on a new contract, is giving some recognition to the problem. The commission chairman has proposed that the parties agree to reopen for a trial operation of a few months. If productivity increases substantially the presumption is that the closed properties could operate at a profit or at least break even. If it doesn't improve, and higher prices or government subsidies don't come to the rescue, the properties would close again. Both union and company officials have indicated they will consider the plan.

Coast Airframe Concerns Expect Increased Business

Los Angeles—Bright prospects in the air freight business and an appearance of greater efficiency among air lines have most southern California airframe manufacturers

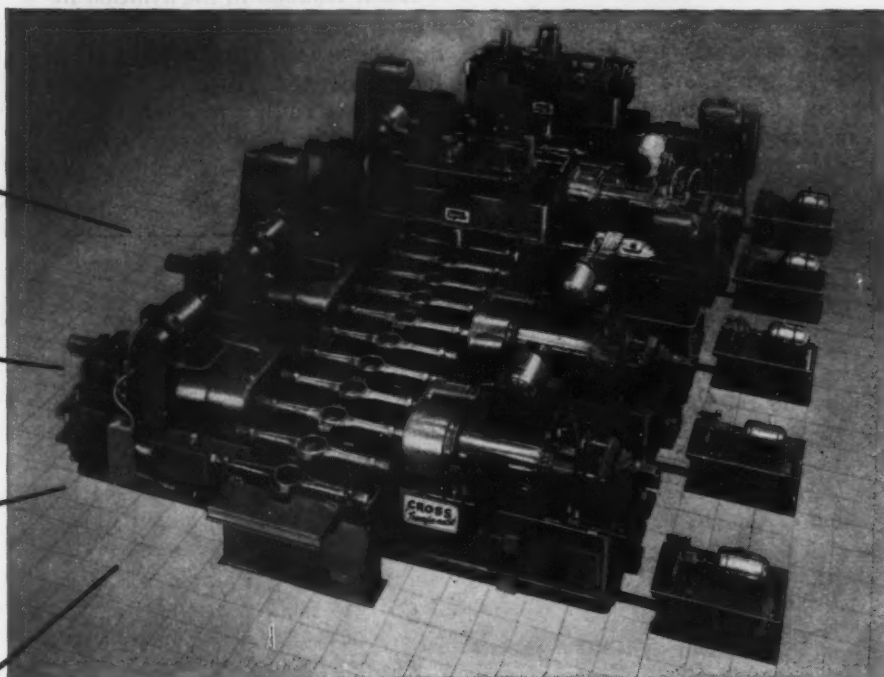
CROSS TRANSFER-MATIC

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AXLE HOUSINGS
PER HOUR WITH
1 OPERATOR

LOWER
CAPITAL
INVESTMENT

EXCEPTIONAL
FLEXIBILITY

SIMPLIFIED
MAINTENANCE



Another cost-cutting application of **VICKERS** **HYDRAULICS**

The Cross Transfer-matic illustrated here uses Vickers Hydraulic Controls in making substantial reductions in the cost of machining axle housings.

A hydraulic transfer mechanism automatically advances the housings (two at a time) from one machine to another. Hydraulic circuits of the individual machines provide for correct progressive positioning and clamping together with the traversing and feeding of the tool slides. Interlocks assure accurate positioning and secure clamping before cutting operations begin . . . also clearance of all tools before transfer to next station.

Exceptional flexibility is provided in that machines can be added, removed or shifted. Transfer mechanism is independent and moves work only from machine to machine. Locating and clamping are done by work holding fixtures integral with each machine.

Indicative of the many advantages of Vickers Hydraulics are gasket mounted Vickers Control Valves that simplify installation, save space and make adjustment easier. Vickers Power Units are compact "packages" that simplify hydraulic system design and reduce costs.

Vickers Hydraulics are particularly adapted to provide the complex motions and operations needed in highly automatic machines. Get in touch with the Vickers Application Engineering Office nearest you for information on how Vickers Hydraulics can improve your machinery.

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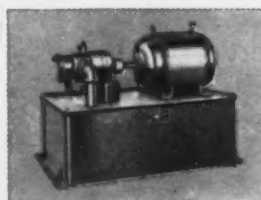
1420 OAKMAN BLVD. • DETROIT 32, MICHIGAN

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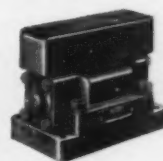
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ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

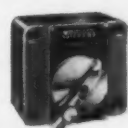
Representative Vickers Hydraulic Pumps and Controls Used on Cross Transfer-matic



Power Unit, Bulletin 46-43a



4-Way Valve, Pilot Operated, Solenoid Controlled, Bulletin 48-27



Flow Control Valve, Bulletin 45-35



Sequence Valve



Check Valve



Pressure Reducing Valve

3989

looking toward the future with greater optimism than at any time in recent postwar years.

Although the largest present Air Force contract is for giant B-36 bombers which are being turned out by Consolidated-Vultee in Texas, southern California plants have numerous contracts to turn out small numbers of experimental planes and many are finding that staying in the commercial field is profitable.

Douglas has both Navy and Air Force contracts for jet fighter planes but it is turning to a sales job in the commercial field to attempt to fill its assembly lines again. The company has revamped the DC-3 transport and has a super version of the old-faithful ready to fly 10,000 miles to contact airline owners in a rejuvenated sales program.

Other Plants Doing Well

Douglas now has 18 four-engined transports under construction under firm orders or current purchase negotiations. A prototype of the DC-6A Liftmaster is scheduled for flight next month.

With three large plants in the Los Angeles area, Douglas still regards its Western Pressed Metals Div. as strictly a sideline. Although it has considerable potential in the developing West Coast automotive field, financial aspects of the steel work are only a small portion of the overall field. Auto parts, plumbing supplies and other pieces are turned out by aircraft workmen between pressing airframe jobs.

The optimistic trend in aviation is reflected in other plants as well. Ryan Aeronautical Co. in San Diego has reported sales of \$3,164,218 in the 3 months ending on July 31, as compared with \$1,367,593 for the same time last year. Sales for the first three-quarters of the company's current fiscal year total \$10,678,249 as against \$5,270,224 for a like 9 months in 1948. One of Ryan's commercial ventures is in selling its Navion, small private plane.

Lockheed Aircraft Corp. has made its third payment of 50¢ a

share on outstanding capital stock this year.

Labor troubles in the aviation industry appear to be solved, following the settlement of threatened Lockheed and Douglas strikes. Others are falling in line. One of the latest was Northrop Aircraft, Inc., which awarded pay increases from \$8.65 to \$10 a month and gave other benefits.

Will Start Battery Production

Los Angeles—Joining the growing list of auto parts manufacturers in the West, Electric Auto-Lite Co., of Toledo, will start manufacturing batteries this month in a plant near Los Angeles.

The new plant will have a capacity of 3000 batteries a day, and, coupled with a similar Electric Auto Lite factory in Oakland, will have a West Coast production possibility of 5200 batteries daily.

P. F. Brown, vice-president in

charge of the Oakland plant, also will manage the new factory. W. A. Zolg, formerly electrical and chemical engineer at Oakland, will be plant superintendent.

Machine Shop Business Hit by High-Cost Production

Seattle—Machine shops in the Puget Sound area are unhappily becoming accustomed to the same meager diet that has recently undernourished the once war-fat foundries.

Most shops report business off more than 40 pct compared with a year ago. A few claim that their business is down nearly 80 pct, while a few others say no more than 20 pct.

Western Gear has eliminated its second shift for the first time since before the war. Skagit Steel & Iron have operated at times this summer on 3 days a week only.

Prices Hold Back Sales

Most machine shop sales managers report that the main thing holding back sales at this time is "price."

Buyers are waiting for the big drop. Yet most shops cannot foresee any appreciable cost reduction during the coming months. They point out that wages still hold high, most overhead expenses are still up, and material has fallen only slightly during the summer. None of this adds up to a big price drop.

The hopeful managers feel that by next spring everyone will be fully convinced that prices aren't going to tumble, and that they will then start to reorder.

Employment in the shops has fallen approximately 40 pct, and a few shops are on a 4-day week. Yet a skilled or experienced machinist can still find a spot in many shops.

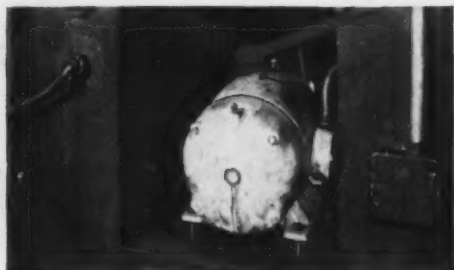
As one production manager stated, "The mechanics and machinists turned out during the war don't have the skill we need. Therefore we still rely on the old timers. Even Boeing, cutting down on help now, still is in the market for highly skilled mechanics and machinists."



PERFECT ALIGNMENT: Forming pipe into circular shape, prior to welding, at the Basalt Rock Co., Napa, Calif. The top and bottom dies of the main press consist of a series of laminated semicircular plates to permit the forming of various size pipe. These laminations can be added or removed as desired. This construction eliminates the use of a die for each size pipe. The steel pipe produced at Napa will be marketed under the label "Basalt-Kaiser" steel pipe.

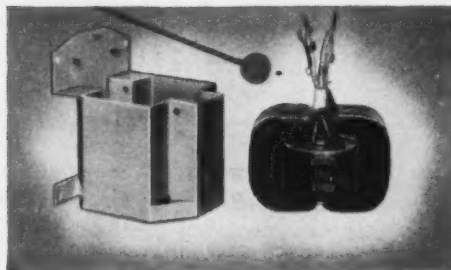
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Cogsdill Twist Drill Company of Detroit developed a unique drill grinder. Instead of reversing the carriage by a cam or crank, they use a 1 h.p. 1200 r.p.m. motor to reverse the carriage drive 50-60 times a minute. In this service ordinary insulation lasted only 5 weeks. After repeated failures the motors were wound with DC Silicone Insulation. Now after more than 11 months of service these silicone insulated motors are still going!

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THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

**President's "Point 4" program awaits Senate action . . .
Capitol Hill considers legislation declaring a moratorium
on freight absorption . . . Lustron asks for loan.**



by

Eugene J. Hardy

Washington — Boggled down in the Congressional morass is President Truman's bold new program for technical and financial aid to economically underdeveloped areas of the world. Dubbed the "Point 4" program because of its numerical position in the President's inaugural address, the project was taken under the wing of the United Nations at the request of the State Dept.

The UN is to draw up cooperative plans for technical assistance. The White House also asked Congress to approve legislation calling for U. S. expenditures of \$45 million for the first year to cover direct assistance from the U. S. as well as participation in the UN activities. The other point covered in the President's legislative request called for Export-Import Bank guarantees for U. S. private investments in underdeveloped areas.

Institute Life Extended

The Senate Banking Committee, after 2 days' hearings, sent this legislation to the Senate floor, where it now awaits action. The House Banking Committee held 5 days' hearings but has taken no action and is not likely to do so for a number of weeks. With

crowded calendars in both houses and legislators anxious to adjourn, the outlook for final passage is far from favorable.

However, existing activities in this field are being continued and strengthened. The President recently signed legislation extending the active life of the Institute of Inter-American Affairs to June 30, 1955. Under previous legislation the institute would have passed away in August, 1950. The new law also authorizes expenditures of \$35 million for the 5-year period ending June 30, 1955. Previous legislation called for a maximum of \$5 million in any one year.

The institute has been carrying on programs in 16 Latin American countries in the fields of education, agriculture, and health and sanitation. The new law will permit continuation of these 25 programs and establishment of new ones in countries where the institute is not in operation. In addition, the Commerce Dept. has a special staff working on the "Point 4" program in an effort to expand its existing activities in the field of technical cooperation.

The State Dept. is working with the UN on the global cooperative program. However, the work of the UN thus far serves to high-

light the difficulties facing any such worldwide effort. At a recent meeting of the Economic and Social Council of the UN at Geneva, the State Dept. describes efforts to outline a UN program for the economic development of underdeveloped countries as having run "into choppy water." Actually, three full days of debate at Geneva revealed a very wide divergence of viewpoint.

Program Given Support

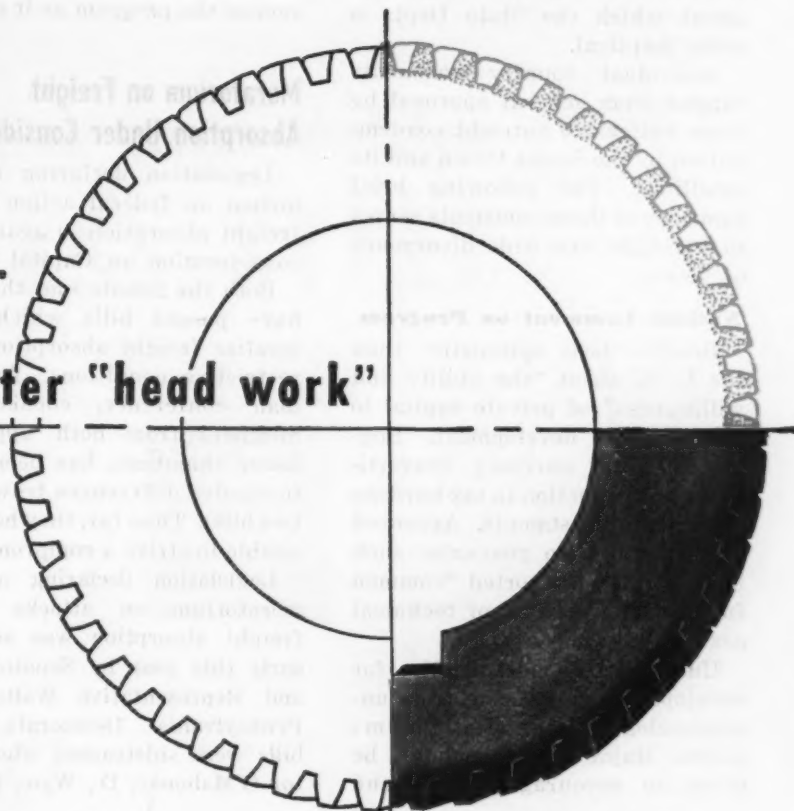
For example, there was unanimous support for an expanded program of technical assistance, but ideas as to how it should be set up and carried out were many and varied. While substantial backing appeared for a program in the \$15 million to \$25 million range as suggested by the U. S., underdeveloped countries were critical and disappointed at the size. These countries also tended to single out capital investment aspects, stressing the need for new capital simultaneously with an increase in knowledge, and expressing skepticism that private capital would do the job.

The U. S. proposed the creation of a small working party to develop details of the program, but the motion was defeated by the



Flamatic-hardened gears help make new Tray-Top Cintilathe worth more, cost less.

Gears hardened for better "head work"



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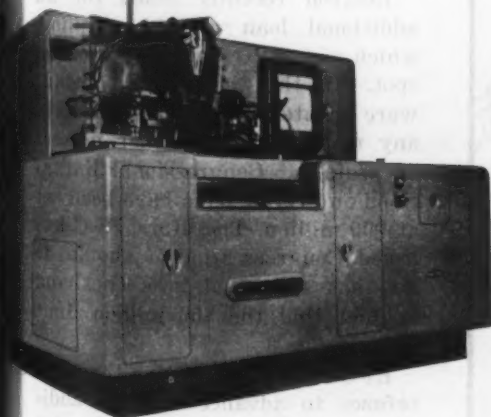
Surface hardness, gradient, and depth held uniformly to predetermined values, as shown by etched section

achieved

Maximum service life, hard, long-wearing surfaces, tough cores, smooth operation and lowest processing cost in lathe transmission gears

More lathe for less money in every detail was written into the specifications of the Cincinnati Lathe & Tool Co.'s new economy-priced Tray-Top Cintilathe, a requirement that Flamatic-hardened transmission gears helped to achieve. First, the desired hardness patterns in the gears (for headstock, quick change gear box and apron) were literally **blueprinted** and optimum values for surface hardness were established. Flamatic proved that these specs could be held, right on the button, each gear—indeed each tooth—being **uniform and uniformly good**. Stock: SAE 3150, surface hardness: RC 52 to 58, production rate on 4" OD, 3 1/4" face, spindle helical gears: 180/hour.

Flamatic's exclusive electronic temperature control plus high temperature flames permit rapid heating of surfaces to within plus or minus 10°F. prior to oil quench. Gears up to 18" OD, shafts up to 24" long, cams, and similar parts are all within Flamatic's wide range of application. Investigate now Flamatic's ability to put **more value for less money** into your products. Write for booklet of case histories: Publication M-1658, or send us a part print for recommendations.



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Economic Committee by a vote of 8-9. This means that the 18-member Economic Committee must undertake this job, an approach about which the State Dept. is quite skeptical.

Individual country comments ranged from general approval by some nations to outright condemnation by the Soviet Union and its satellites. The following brief summary of these comments serves to highlight the wide divergence of views:

Nations Comment on Program

Brazil—"Less optimistic" than the U. S. about "the ability and willingness" of private capital to contribute to development. Suggested wider currency convertibility and reduction in tax burdens on foreign investments. Approved U. S. proposal to guarantee such investments. Supported "common fund" administration of technical assistance money.

United Kingdom—Initiative for development must come from underdeveloped countries themselves. Major emphasis should be given to encouraging food and

agricultural production and to transport, power, and industry. "Governments most nearly concerned" must be in a position to review the program as it emerges.

Moratorium on Freight Absorption Under Consideration

Legislation declaring a moratorium on federal action against freight absorption is again under consideration on Capitol Hill.

Both the Senate and the House have passed bills which would legalize freight absorption under restrictive conditions. An eight-man conference, consisting of members from both upper and lower chambers, has been trying to resolve differences between the two bills. Thus far, they have been unable to strike a compromise.

Legislation declaring a 1-year moratorium on attacks against freight absorption was advocated early this year by Senator Myers and Representative Walter, both Pennsylvania Democrats. Their bills were sidetracked when Senator O'Mahoney, D., Wyo., proposed

permanent legislation declaring good-faith freight absorption legal.

The renewed consideration being given moratorium legislation springs from the belief among some congressmen that the O'Mahoney proposal cannot be enacted into law this year. However, no formal action on any of the bills will be taken until late this month, when Senate and House conferees resume their discussions.

Government Concerned Over RFC Loans to Lustron

Latest gimmick in the government's effort to extricate itself from its financial involvement with the Lustron Corp., builders of all-steel prefab houses, involves the planting of feelers to the effect that major steel interests are dickering for the purchase of Lustron's properties.

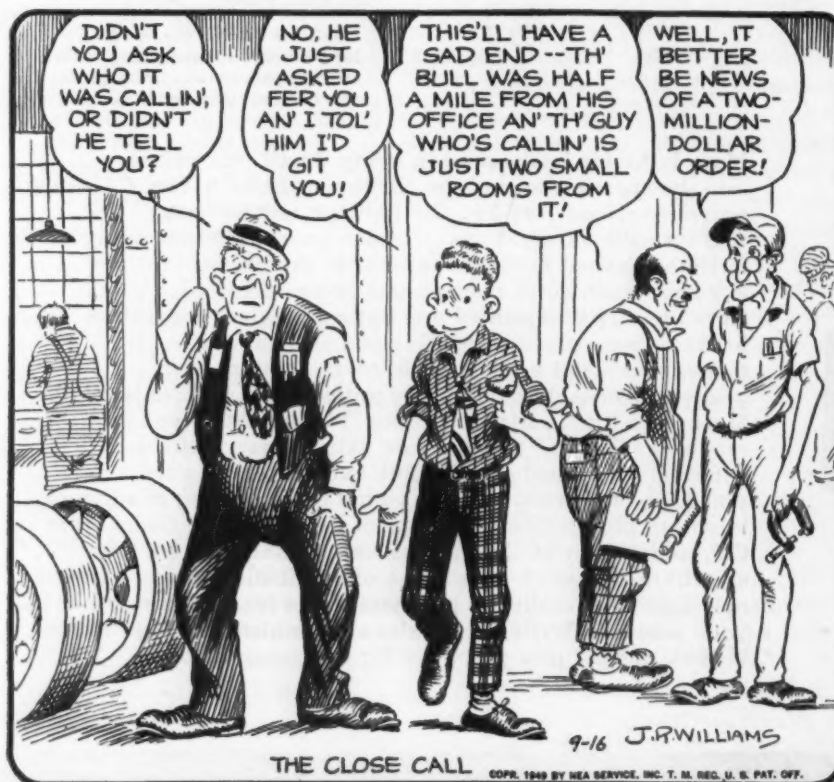
Actually, there is no basis in fact for these rumors, but it does show the extent of deep concern felt by the government. Lustron was started on its way by former Housing Expediter Wilson Wyatt. However, despite generous granting of Reconstruction Finance Corp. loans to the tune of \$37.5 million, representing practically all of its capital, the firm has never been able to get into profitable production of the porcelain-enameled steel houses.

Lustron recently asked for an additional loan of \$14.5 million, which put RFC on the proverbial spot. If this additional amount were granted, RFC would not have any money left for other makers of prefabs. Congressional limitations on prefab loans have been set at \$50 million. Therefore, RFC has asked Congress what it should do and has suggested in a backhand manner that the \$50 million limit be raised.

RFC takes the position that if it refuses to advance Lustron additional money, the firm will go under thereby wiping out at least a major share of the government's investment. Obviously, RFC would not be adverse to having some firm with adequate capital step into the picture.

THE BULL OF THE WOODS

By J. R. Williams





IRON AGE
FOUNDED 1855

FEATURE ARTICLES

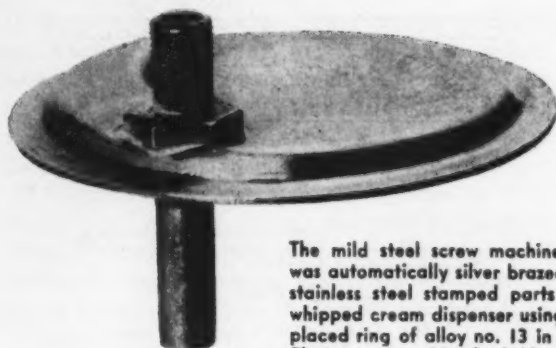
HOW TO

Silver Braze and Solder STAINLESS STEEL



By **LESTER F. SPENCER**

Landers, Frary & Clark,
New Britain, Conn.



The mild steel screw machine fitting was automatically silver brazed to the stainless steel stamped parts of this whipped cream dispenser using a pre-placed ring of alloy no. 13 in table I. Photo courtesy Handy & Harman.

SILVER brazing, at times called silver soldering, for joining various stainless steels has proved invaluable not only in the production of high strength joints but also from an economic viewpoint. The austenitic stainless steel compositions or AISI 300 types, are easily brazed, the most difficult analysis within this category being the type 303 free-machining grade. The straight chromium compositions or AISI 400 steels are more difficult to braze, because of the type of oxide formation that develops on the surface during brazing.

In brazing austenitic stainless steels, the optimum brazing temperatures commonly employed are within the carbide precipitation range of 1800° to 1500°F, and brazing should be completed in a minimum of time to assure a good joint. The formation of these harmful carbides, which affect the corrosion resistance of the alloy, is a function of both time and temperature, so that with a minimum brazing time, the formation of carbides will be correspondingly low. Where design will permit, parts are often water quenched directly after brazing to provide a

SUMMARY: The author discusses the "how's" and "why's" of silver alloy brazing and soft soldering various types of stainless steel compositions. Alloys, standard specifications, fluxes and joint design, as well as part cleaning and joining techniques, are discussed.

rapid temperature drop to below the lower limit of this dangerous zone. When assurance from intergranular carbides is necessary, the stabilized grades are employed. No corrective treatment, such as annealing at 1875° to 2000°F, can be given once the part has been brazed, since the annealing temperature is above the melting point of the silver solders.

Straight chromium stainless compositions have a tendency to air harden, and a solder and a flux combination should be employed that permits brazing below critical temperatures of the material. For type 410 stainless brazing should be performed below 1500°F, while for alloys such as types 446 and 430, brazing temperatures should be below 1600°F.

To develop the proper joint strength, brazing is dependent upon a number of factors. These include: Proper design of the joint in relation to the part design; proper procedures in critical operational steps such as cleaning prior to brazing and selection of solder and flux; approved technique in silver brazing plus skill of the operator; sufficient strength of the metal or metal combination to be joined; mechanical characteristics of the structure, such as solder joint thickness.

The three most practical joints used in production are the butt, scarf and lap or shear joints shown in fig. 1. The butt joint is used where the double thickness of lap joints is undesirable. High strength joints can be obtained if clearance of 0.001 to 0.003 in. are observed.² On this subject, Van Natten³ advises a clearance of from 0.0015 to 0.003 in. The reason for this specific clearance is illustrated in fig. 2, which shows the optimum strength at about 0.0015 in. and the tensile strength progressively diminishing as joint thickness increases. The data were obtained from joints made from stainless steel sheet, 0.031 in. x 0.50 in. having an as received strength of 160,000 psi. The joint surfaces should be accurately squared so that when parts are set up for brazing, clearances will be uniform over the entire joint area.

The scarf joint is a special form of butt joint in which the surfaces to be joined are cut at an angle less than 90°. It can be used where maximum strength without increase of material thickness is desired. With this type of joint, it is necessary to have close clearances to produce a high strength joint, and, in addition, the joint surfaces should be cut accurately to the angle specified.

The lap or shear type joint is the most satisfactory of the three because any desired factor of safety can be provided by varying the lap or shear area. It is also the easiest to braze since the parts can be readily held in place. In joining flat parts, a little pressure will assure a com-

plete bond. In making lap joints that include tubular members, pressure cannot be successfully applied in most instances. Thus, close clearances and capillary action are the controlling factors in producing a completely sound bond. The amount of lap depends upon the strength of the metals being joined and the desired factor of safety. Mathematically, the amount of lap can be calculated:²

$$X = \frac{W(D - W)YT}{LD}$$

where:

X is the depth of shear

D is the shear diameter

T is the tensile strength of the weakest member

W is the wall thickness of the weakest member

Y is the factor of safety

L is the shear strength of the silver brazing alloy

A similar method can be used with flats, in which case the formula becomes:

$$X = \frac{YTW}{L}$$

Good and poor brazed joint designs are shown in fig. 3.

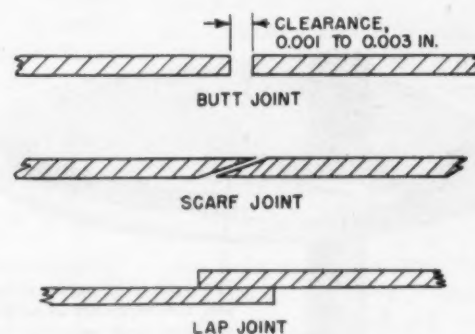


Fig. 1—Basic joints for silver alloy brazing stainless steel compositions.

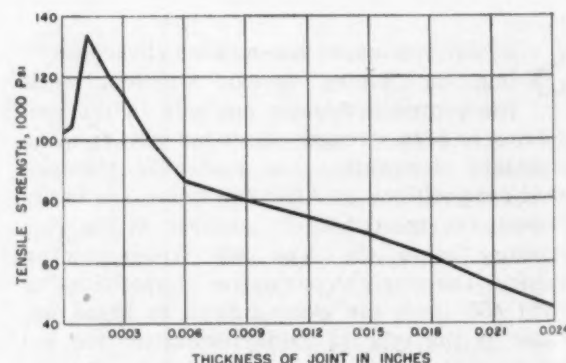


Fig. 2—The effect of joint thickness on tensile strength of silver alloy brazed stainless steels.

The numerous compositions of silver brazing alloys contain principally silver, copper and zinc as alloying elements as well as special compositions containing such elements as nickel, cad-

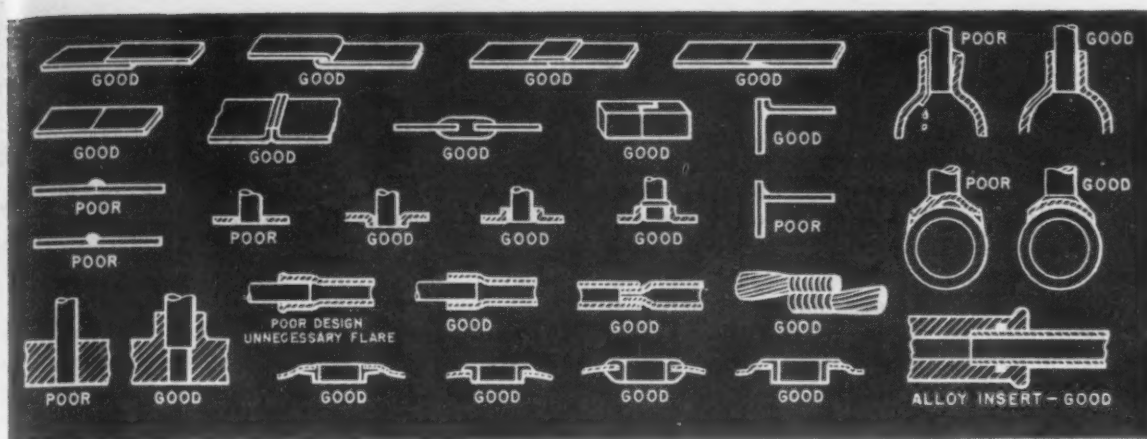


Fig. 3—Good and bad joint designs for silver brazing stainless steel.

mium, manganese, tin and phosphorus. The chemical composition along with both melting and flow points are given in table I. In table II there is a correlation between specifications from various sources and chemical compositions of various alloys. All alloys included in table I are recommended for silver soldering stainless steels, but the number of alloys successfully employed is restricted to a few analyses. Alloy No. 15 in table I, containing 50.0 pct silver, 34.0 pct copper and 16.0 pct zinc, has been successfully used in torch brazing, the joints being quite malleable and ductile. Such characteristics are necessary where shock resistance is required. The alloy can be used only in limited applications in brazing stainless because of its high flow point. Of interest is the brazing alloy containing 85.0 pct silver and 15.0 pct manganese, reported by Van Natten³ as utilized during the war in German aircraft production. Its strength at elevated temperatures and corrosion resistance enhance its use in brazing stainless steels where service is at elevated temperatures.

The distinguishing characteristics of the various types of silver brazing alloys include their melting temperatures and the relative flowing characteristics, their ability to wet metallic surfaces, the tendency of their components to oxidize and/or volatilize, and the strength and ductility of the alloy. The melting and flow characteristics of the specific silver brazing alloy have a practical bearing in brazing.

In furnace brazing an item at the eutectic temperature of 1125°F, alloy No. 12 in table I will melt within a narrow range and the entire quantity of alloy will flow at once leaving no trace of skull. In using alloy No. 8 only a portion of the alloy will flow at the eutectic temperature and a skull of higher melting metal will remain. In this case it would be better to use alloy No. 12 not only to get better bonding, but also to minimize cleaning after brazing.

In torch brazing where the part is preheated above the temperature of the flow points of either alloy, the melting characteristics will be similar,

and it may be economically advantageous to utilize composition No. 8. The costs of these alloys are rather high because of the silver content, and the savings between the No. 8 alloy containing 35 pct silver and the No. 12 alloy containing 45 pct silver would be considerable in a high production job. In using a wide range silver alloy composition for fillet brazing, advantages are gained in that the material can be worked a little longer to build up the fillet. The lower melting point material can serve to partly anchor the silver deposit while the fillet is being formed.

The term wetting applies to the ability of the solder to bond readily onto the material to be brazed, thus producing a strong joint. Both zinc and cadmium perform this function in addition to lowering the flow point of the compositions. Manganese has the capacity for wetting and is used where both zinc and cadmium are inadequate, as exemplified in the brazing of refractory alloys. Tin is used for this purpose where zinc or cadmium are objectionable in the brazing operation. Phosphorus is used to some extent, but the brazing alloys containing this element are not recommended in brazing any steel composition because of the harmful brittle iron phosphide that forms. Phosphorus containing alloys are most suitable for brazing copper and copper alloys.

Volatilization and oxidation is a characteristic of most silver solder compositions and precautions must be taken to minimize this effect to realize high strength joints compatible with the specific soldering analysis employed. Both strength and ductility are important in joining stainless steel, and any change in the joint bead analysis may have considerable effect on these properties. Also, there must be a minimum of zinc and cadmium in the soldering composition. As the zinc and cadmium content with a specific solder composition increases beyond 40 pct, ductility decreases.⁴

Fluxing materials are generally supplied as paste or powder. Powdered flux is usually sprinkled on both the surrounding area and the

Silver Braze and Solder

Continued

joint, and the preheated brazing alloy is dipped into the powder for protection during feeding into the joint. Paste fluxes are more commonly used, being brushed on the joint area. Because most fluxes employed in silver brazing stainless are basically acid fluorides, care must be taken to restrict their use in the area of the joint to be brazed and minimize spattering. Carelessness in handling the fluxing material, along with improper cleaning methods are the primary causes of corrosive attack. In addition to the acid fluorides, other ingredients are water and such chemicals as borates and borax or boric acid.

The flux should be active in the vicinity of 1200°F, the temperature range of the majority of the silver brazing compositions. The flux should provide sufficient coverage and protection of the material at the specific brazing temperature used; and it should float off any oxides from the base metal, thus allowing the molten brazing material to flow into the joint and produce a satisfactory, high strength joint.

Regardless of the method employed in brazing, an approved cleaning cycle is vital. In the case of mild steel compositions free from rust or mill scale, the cleaning consists of degreasing. In brazing stainless steels, it is necessary to scratch brush the area to be joined to aid in obtaining the proper wetting action. The mechanical or abrasive action removes chromium oxide that forms on the surface of the steel, this formation being recognized by Swift⁵ in accordance to his experience in the brazing of these alloy materials. Of interest is the procedure proposed by Gauthier⁶ for cleaning stainless steels:

(1) Presoak in Kelite Ketrex 50/50 with kerosene for 15 min at room temperature.
(2) Rinse thoroughly in cold water, pressure preferred.

(3) Immerse in hot alkali (Kelite Keprocess) 190° to 200°F 13.0 to 13.2 pH for 15 min or until a no water break surface appears.

(4) Rinse in hot water at 120° to 140°F.

(5) Immerse in acid pickle (Kelite Scale-off) 1 to 5 min to thoroughly remove oxidation and discoloration.

(6) Rinse thoroughly in cold water.

The area to be joined must be thoroughly coated with the fluxing material to assure an even coating. It has been suggested⁵ to: (1) Add a wetting agent to the flux so that there will be no uneven coating of the flux to leave islands of unprotected metal in the joint; and (2) move the two fluxed surfaces against each other after fluxing to obtain a smooth and complete overall flux coating. Flux must penetrate into the joint, this sealing off assuring both complete brazing and elimination of oxygen within the joint.

After the flux has dried all parts of the joint must be heated uniformly and quickly. The time factor in silver brazing of the austenitic stainless steels is important to minimize intergranular carbides. In brazing dissimilar metals, such as a brass plate to a stainless container, it is imperative to apply the heat to the brass with practically no direct heat application on the stainless. This is because stainless is a poor heat conductor, and any direct application of heat to that metal may cause overheating. In heating the brass, the stainless steel will heat by conduction and from the side flare of the torch to a brazing temperature of 1200°F. Where possible, the brazed joint is quenched into water, but this practice is limited to joints designed to withstand this treatment. This not only brings down the heat rapidly to below the lower range of the carbide precipitation range, but aids in removing excess flux.

TABLE I
Composition of Commercial Brazing Alloys

Alloy	Chemical Composition, Pct						Flow Point, °F	Melting Point, °F
	Silver	Copper	Zinc	Cadmium	Phosphorus	Others		
1	5.0	58.0	37.0	.....	.....	.....	1800	1875
2	7.0	85.0	.....	.....	.....	Sn=8.0	1805	1225
3	9.0	83.0	38.0	.....	.....	.....	1885	1450
4	15.0	80.0	.....	.....	5.0	.....	1300	1185
5	20.0	45.0	35.0	.....	.....	.....	1800	1430
6	20.0	45.0	30.0	5.0	.....	.....	1800	1140
7	30.0	38.0	32.0	.....	.....	.....	1410	1370
8	35.0	28.0	21.0	18.0	.....	.....	1295	1125
9	40.0	30.0	28.0	.....	.....	Ni=2.0	1435	1240
10	40.0	36.0	24.0	.....	.....	.....	1445	1330
11	45.0	30.0	25.0	.....	.....	.....	1370	1250
12	45.0	15.0	16.0	24.0	.....	.....	1145	1125
13	50.0	15.5	16.5	18.0	.....	.....	1175	1160
14	50.0	15.5	15.5	16.0	.....	Ni=3.0	1270	1195
15	50.0	34.0	16.0	.....	.....	.....	1425	1275
16	60.0	25.0	15.0	.....	.....	.....	1325	1280
17	60.0	30.0	.....	.....	.....	Sn=10.0	1325	1095
18	65.0	28.0	.....	.....	.....	Ni=2.0 Mn=5.0	1445	1385
19	65.0	20.0	15.0	.....	.....	.....	1325	1290
20	70.0	20.0	10.0	.....	.....	.....	1390	1335
21	72.0	28.0	.....	.....	.....	.....	1435	1435
22	75.0	22.0	3.0	.....	.....	.....	1450	1365
23	75.0	20.0	5.0	.....	.....	.....	1425	1350
24	75.0	.....	25.0	.....	.....	.....	1345	1300
25	80.0	16.0	4.0	.....	.....	.....	1490	1360

TABLE II
Commercial Silver Brazing Alloys Accepted as Standard Specifications

Alloy No. (See Table I)	Source of Specification and Number								Chemical Composition, Pct			
	U. S. Navy Specifications 47-5-13 (Interim)	U. S. Navy Bureau of Aeronautics Specifications 47-5-13 (Interim)	U. S. Army Chemical Warfare Service Specifications 196-131-80	U. S. Army Ordnance Dept. Tentative Specifications AXS-741	U. S. Army Air Force Specifications 11342	Federal Government Agencies, Federal Specifications QQ-S-561d	ASTM Specifications B73-29	SAE Aeronautic Materials Specifications	Ag	Cu	Zn	Others
4	III	III	3	.....	A	3	.....	.....	15.0	80.0	.....	Phos. = 5.0
13	IV	IV	4	4	B	4	.....	AMS 4770	50.0	15.5	10.5	Ca = 18.0
14	V	V	5	.....	.....	.....	.....	.....	50.0	15.5	15.5	Ca = 16.0
3	.....	.....	.....	.....	.....	.....	1	.....	9.0	53.0	38.0	Ni = 3.0
6	0	0	0	.....	.....	0	2	.....	20.0	45.0	35.0	.....
8	.....	.....	.....	.....	.....	.....	3	.....	20.0	45.0	30.0	Ca = 5.0
11	I	I	1	.....	.....	1	4	.....	45.0	35.0	20.0	.....
15	.....	.....	.....	.....	.....	.....	5	.....	50.0	34.0	16.0	.....
19	II	II	2	.....	.....	2	6	.....	65.0	20.0	15.0	.....
20	.....	.....	.....	.....	.....	.....	7	.....	70.0	20.0	10.0	.....
25	.....	.....	.....	.....	.....	.....	8	.....	80.0	16.0	4.0	.....

Courtesy of Handy & Harman

In the author's experience, the application of jigs and fixtures is mandatory for high production and maintenance of the position of the component parts to be brazed. Design of jigs and fixtures should be such that alignment of parts is realized, but fittings should not be under tensional strains. One side of the joint must be free for expansion and contraction during both the heating and cooling cycle. Thus, turn table arrangements have been employed extensively where there are from four to six fixture positions. The manpower required is dependent upon the design and the number of brazed joints within the design, and both equipment and manpower will be dependent on the design of each specific assembly.

Bench brazing is also practiced extensively, and jigs and fixtures are also used. Torch heating is another method often used in silver brazing stainless steels; the fuels being combinations of oxyacetylene, oxygen and city or natural gas, air and acetylene, and air and gas. The use of multi-tip torches is recommended and the flame should be neutral to reducing, heating the joint slightly above the flow point of the brazing alloy.

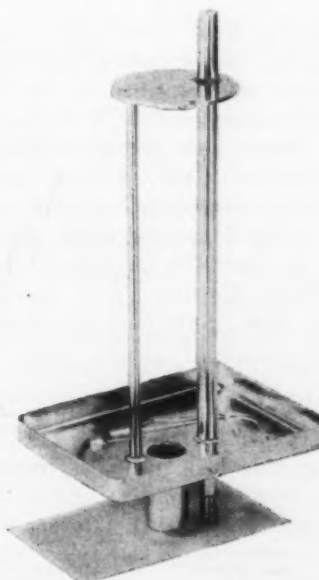
Induction heating for brazing is being recognized as suitable for high production volume. Where induction heating is practiced, it has been recommended⁷ to use preplaced rings and inserts.

Soft soldering is practiced quite widely in joining stainless steels where mild corrosive conditions and low strength of joint is encountered in service. It is definitely not recommended for the joining of other material such as mild steel and the nonferrous metals to stainless. As in silver soldering, cleaning along with the choice of proper solder and flux are below the carbide precipitation range, no danger of intergranular carbides in soft soldering the austenitic compositions will be experienced.

The selection of a solder is usually on the basis of either the color of the completed soldered joint; the strength of the joint; or the workable range of the specific solder. There are a number of compositions from which to choose; the higher

lead solders having a darker color. Those solders having a high tin content are silvery in appearance, and possess greater strength than the high lead solder compositions. For these reasons, the higher tin solders, approximately 75.0 to 90.0 pct tin, are preferred. In certain instances, where the pure food laws prohibit the use of a lead-containing solder, the pure tin solder is utilized.

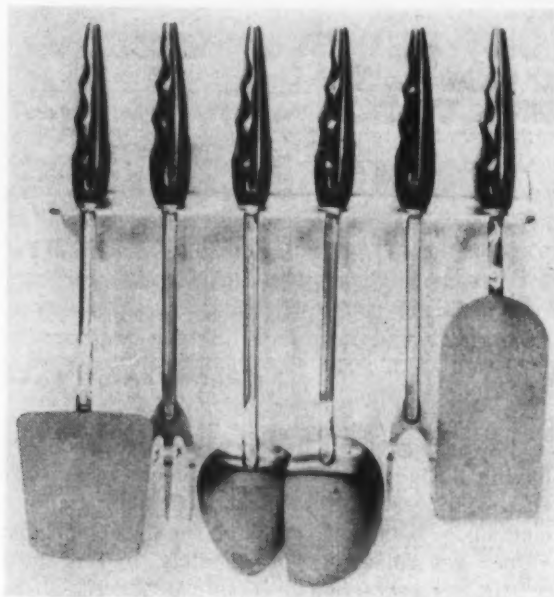
The flux usually consists of hydrochloric acid and the chloride salts; the percentage and type of salts varying in accordance with shop practice. Since the acid flux material is corrosive and definitely etching to the stainless steel surface, application of the flux must be confined to the area to be soldered. Any spattering should be avoided, and if spattering occurs, it should be removed at the completion of the joint. It is to the best advantage to design the joint so that proper cleaning can be realized. On polished or bright cold rolled surfaces¹ the use of uncut



This all stainless steel syrup pump was silver brazed with alloy no. 2 (table I) using preplaced rings. Heating was with multi-flame oxy-purpose tips with the assembly rotating through the heat zone. Photo courtesy Handy & Harman.

Silver Braze and Solder

Continued



Stainless steel parts of this barbecue set are silver brazed, forming strong and sanitary joints. Photo courtesy Handy & Harman.

hydrochloric acid has been satisfactory. This should remain on the surface for an appreciable time, possibly 1 min, to etch the surface properly. This facilitates keying-in of the solder with the

base metal. The metal can also be prepared by abrading the surface slightly.

The use of a soldering hammer is common practice. However, in the soft soldering of the stainless steels, a larger hammer head is required because of the lower heat conductivity of the austenitic steels. Those soldering irons that are heated by an internal resistor unit are more convenient than the old type that is heated by a gas flame. In either case, the solder tip must be well tinned. Other methods of applying the solder include the dipping in a solder bath, wiping, sweating and those methods that involve gas flame heating, blow torches and resistance or induction heating methods.

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"Metal Cutting Tool Handbook." Engineering data, design, nomenclature and fundamental information are contained in this publication for drills, reamers, counterbores, taps and dies, milling cutters, hobs and gear shaper cutters, and broaching tools. Critical components, sizes, design standards, cutting speeds and feeds, cutting fluids and other such information are outlined for the use of such cutting tools. Metal Cutting Tool Institute, 405 Lexington Ave., New York 17. \$6.50. 647 pp.

* * *

"Structural Design in Metals," by C. D. Williams and E. C. Harris. One of a series in civil engineering, this book provides material for a course in structural design at the junior year engineering college level. Covers welded and riveted construction, selections of sections, connections, plate girders, trusses, bearings, rigid frames and fatigue of structural members. Ronald Press Co. 15 E. 26 St., New York 10. \$6.50. 950 p.

"Bottom-Up Management," by William B. Given. Book presents new goal of management philosophy in the release and stimulation of individual initiative. Author writes from own successful experience in his own company over a period of years, that the human factor is the most important element in business management. Harper & Bros., 49 E. 33 St., New York. \$2.50. 170 p.

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"Tool Engineers' Handbook," American Society of Tools Engineers has released a reference book on all phases of production planning, control and inspection; design; materials and machinability; casting and extrusion; grinding and finishing; metal forming, welding and joining; gaging; fixture, die and tool design; machine tool controls and feeds; design of threads, gears, bearings and springs; and operations in mechanical manufacturing industries. McGraw-Hill Book Co., 330 W. 42 St., New York. \$15.00. 2070 p.

AUTOMATIC

**FIRE
EXTINGUISHING
SYSTEM**

ENDS DIP TANK FIRE HAZARD

By W. E. Morgan, Jr.



Manager, Industrial Div.,
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Belleville, N. J.

AMONG the fire hazards encountered in the metalworking industry, processes involving the storage and handling of paint take a huge toll every year in destroyed plants, machinery and human life. Even though most metalworking plants observe the requirements of ventilation and good housekeeping in their painting operations, fire continues to find victims every day in plants where no specific fire protection has been provided.

The H & F Mesinger Mfg. Co., Bronx, New York, a large producer of bicycle and motorcycle seats, recently installed modern fire protection for their lacquer dipping machinery to eliminate the threat of serious fire.

Mesinger turns out 10,000 parts and assemblies for steel bicycle and motorcycle saddles daily, all of which pass through a conveyer-fed lacquer dip tank and drainboard. The lacquer used is a synthetic Japan containing highly flammable solvents.

To guard against sudden fire that would start on the surface of the paint bath or in vaporizing solvents and might mushroom quickly to other plant areas, fire protection engineers of Walter Kidde & Co. designed an automatic carbon dioxide extinguishing system for the Mesinger dip tank and drainboard. Components of the system have been built into the dip tank and drainboard

SUMMARY: An automatic CO₂ fire extinguishing system built into a lacquer dip tank and drainboard is described. In addition to strategically located nozzles, the system also features arrangements for automatically closing a ventilator duct damper and for shutting off electric power.

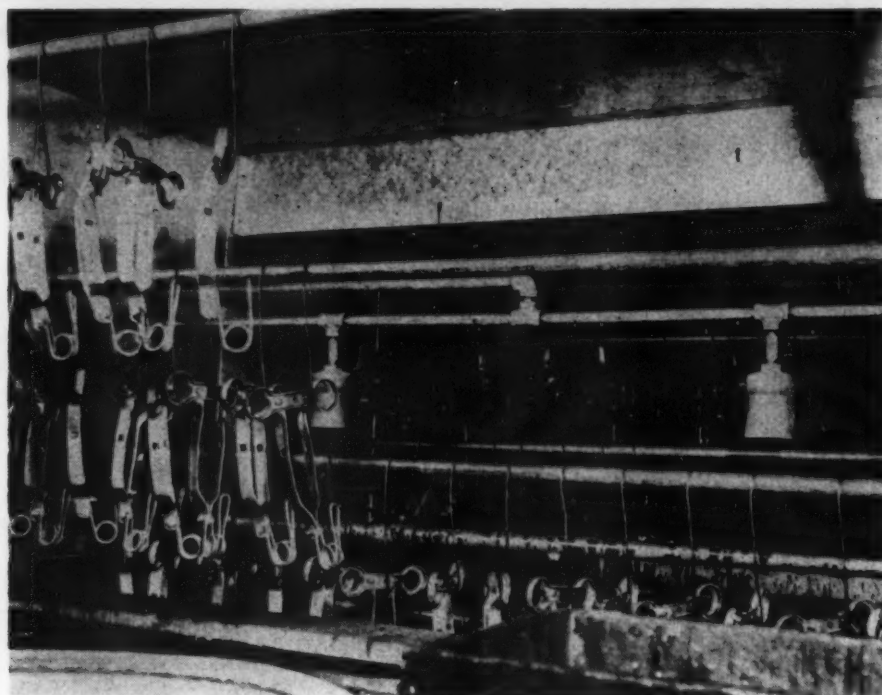


FIG. 1.—This view of the lacquer tank shows two nozzles located above dip tank. The heat actuator, which controls the system, can be seen at the top of the enclosure, above the center of the tank.

equipment and provide protection 24 hours a day to snuff out fire at a moment's notice.

Two steel cylinders, containing 100 lb of liquid carbon dioxide, under pressure of 850 psi, are stored in a corner of the paint dipping room. The cylinders are equipped with automatic discharge heads connected by copper tubing to a rate-of-temperature-rise heat actuator spotted directly over the center of the lacquer tank, as shown in fig. 1.

A piping network connects the cylinders with a series of 10 Multijet discharge nozzles, two of

which are suspended about 18 in. above the lacquer surface (see fig. 1). Four nozzles are built into the sides of the dip tank enclosure in a horizontal position just above the lacquer level. Four more nozzles are built horizontally into the inclined drainboard over which the conveyer passes after dipping, thence into a drying oven. These nozzles are shown in fig. 2.

The system protecting the dip tank includes a pressure-operated trip, in the carbon dioxide piping, which controls a damper in an exhaust duct positioned to carry off rising paint fumes and

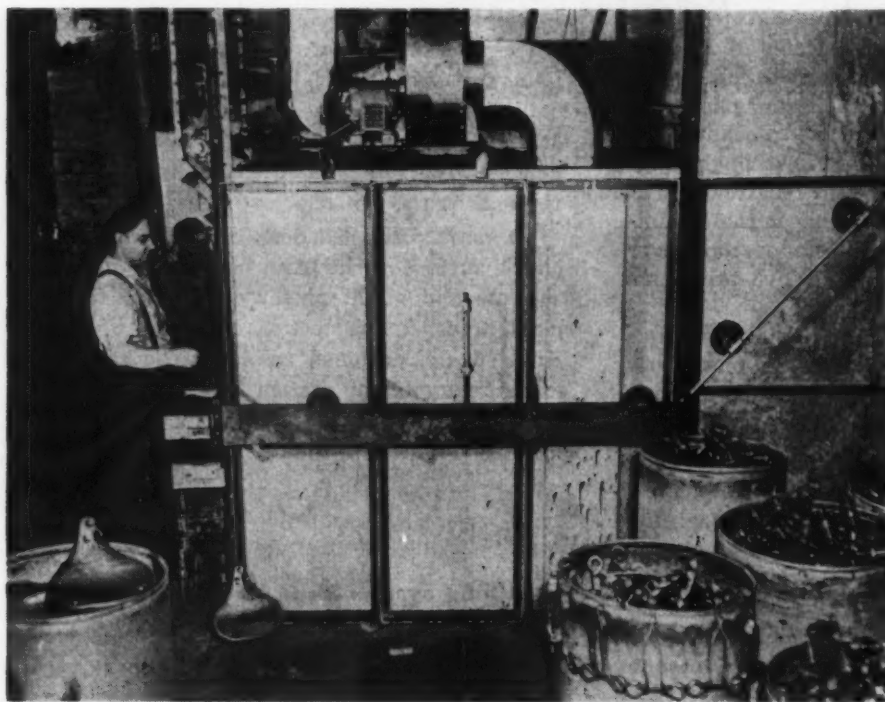


FIG. 2—Two flanged discharge nozzles, visible in this view, are located just above the lacquer level in the tank. Two more are along the inclined drainboard.

vapors, as shown in fig. 3. An automatic 3-pole switch to shut off electric power to the driving motor, oven and other electrical equipment is mounted on the outside of the dip tank casing.

If fire breaks out on the surface of the lacquer reservoir or in the drainboard area the excessive heat affects the heat actuator almost immediately. Expanding air in the actuator bellows shoots a wave of pressure through the tubing to the cylinder head which automatically opens the carbon dioxide release valve.

Under its own power the pressurized carbon dioxide rushes through the piping and out the nozzles. As it hits the air the carbon dioxide becomes a gas and expands to 450 times its stored volume. It lays a blanket over the flames, excludes air from the fire and smothers the blaze with speed and safety. Simultaneously, the discharging carbon dioxide closes the duct damper over the tank and prevents flow of air to the fire surface. The electrical switch cuts off power and stops all moving machinery.

Because it is completely inert the carbon dioxide does not contaminate the lacquer in the tank and it leaves no messy residue to damage the machinery. It is a nonconductor of electricity, an essential property for an extinguishing agent used where electrically powered equipment is being protected.

Location of the discharge nozzles is such that the burning lacquer is not disturbed or spread, yet the entire tank and drainboard surface is enveloped with fire-killing gas.

The Mesinger Company dip-tank installation is typical of many carbon dioxide systems used in

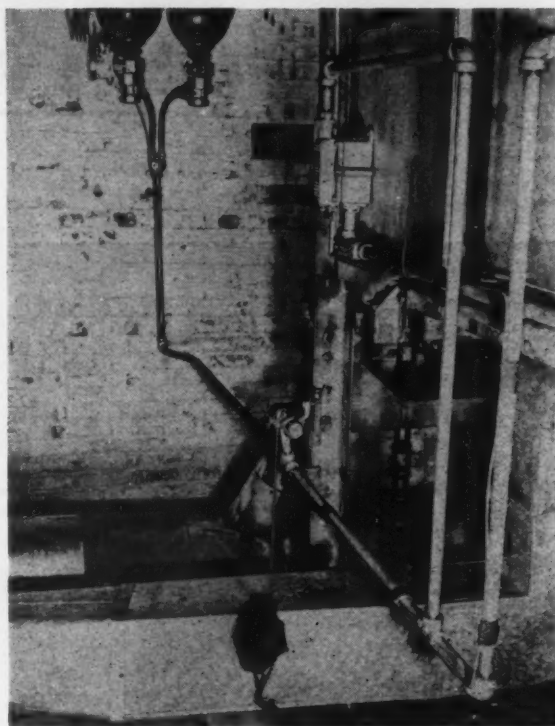


FIG. 3—Rear view of dip tank shows top of CO₂ cylinders with automatic discharge heads, pressure trip with chain connecting to ventilating duct damper, and automatic switch for power cut off.

a variety of industries today. Built-in automatic systems of this kind are the only safe means of adequate protection for such hazards, where fire, if it strikes, is almost always impossible to control with first aid portable extinguishers.

Internal Grinding Rate Doubled on Cam Rings

IN making Dynaflo transmissions available on more models of the Buick automobile, output of all parts was substantially increased. Rates on cam ring internal grinding have been doubled by the use of a Heald Size-Matic centerless internal grinder in place of the chucking type previously used. It is important that close concentricity of both the OD and ID be held. Before grinding the ID, the OD of several rings clamped on an arbor is finished ground by conventional means. When centerless grinding the ID, the rings rotate on the OD, and the grinder operates on a semiautomatic cycle.

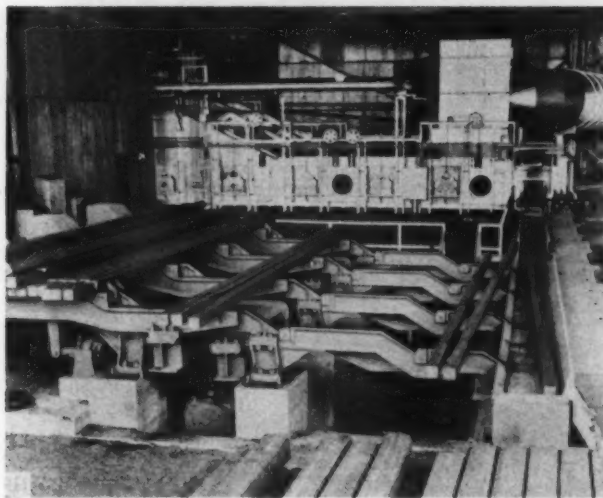
Cam rings are loaded in a magazine, from which one ring at a time drops into grinding position when a gate is lifted. This occurs after the upper idling guide roller is rocked upward, and the ring falls so that it rests against the lower idling guide roller and the large driving drum on the spindle of the machine. When in this position, the upper idler rocks back against

the cam ring so that it is supported by the three rollers while being rotated.

During this rotation, the grinding wheel automatically feeds into the bore to make a rough grinding cut, backs out, is dressed by a diamond, feeds in to make the finish grind and then backs out. When clear of the ring, the upper idler rocks out of the way and an arm, rocking from below the work, raises the ring until it rolls over the top of the driving drum and down a chute. This completes the automatic cycle which requires only 21 sec, hence about three rings a minute are precision ground.

As the ring remains in fixed position while rotating, the wheel is automatically adjusted to compensate for dressing after each dressing is completed. A total of about 0.012 in. of metal is removed from the bore of the ring in the two grinding cuts and the bore is held well within the ± 0.001 -in. limits specified.

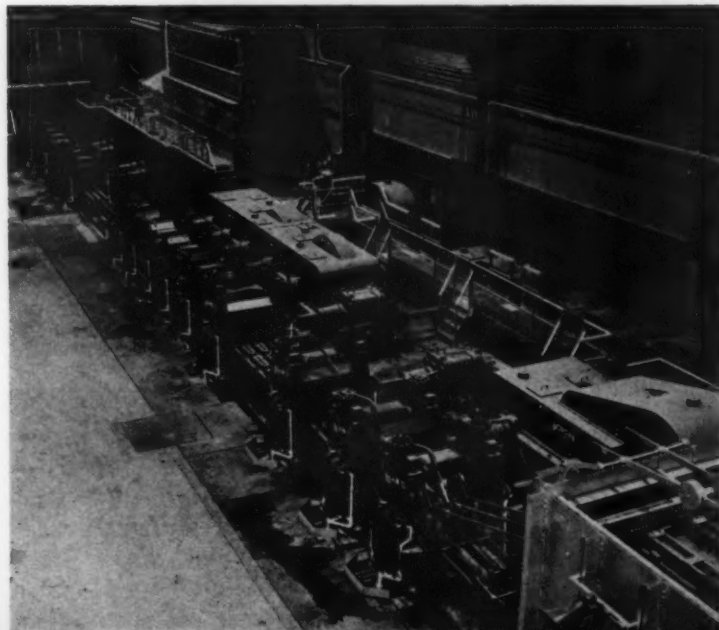
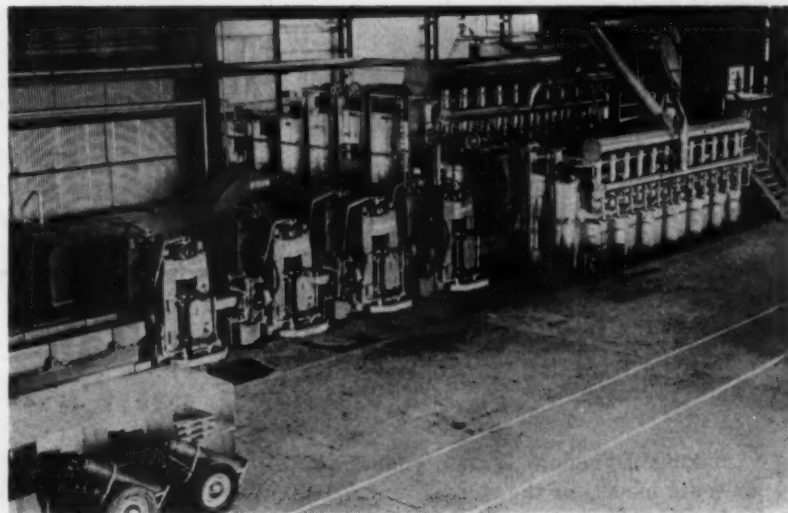
ROD AND BILLET MILL



ABOVE—First unit of its kind, this machine charges the heating furnace. A double eccentric moves the bed so that one or two billets are dropped onto the roll table. A crane deposits a load on the upper bed, left, and the unscrambler does the rest.

RIGHT—Discharge side of the double combustion zone type heating furnace. This side charge and discharge, 60 ton per hr furnace built by Rust Furnace, operates on full automatic control. Billets enter the single strand, 4-strand breakdown mill and then pass on down the table to be sheared and charged into the holding furnace.

BELOW—Leaving the holding furnace (lower right) billets enter the rod mill proper, which contains nine roughing stands, followed by five stands (directly in front of the elevated pulpit) that are intermediate stands prior to the repeaters. Three billets are rolled simultaneously through this train, the repeaters and the finishing mill.



A MAJOR step in the modernization and integration of wire-product manufacturing facilities of the Colorado Fuel and Iron Corp. is the installation of a \$5 million combination rod and billet mill at the Minnequa Works, Pueblo, Colo. Improved facilities in wire-drawing equipment in recent years plus acquisition of the Wickwire Spencer facilities brought to attention the need for a new rod mill.

The mill is not designed to make a new product, but will be used to better supply and augment the production of the company's present diversified wire products. Built by Morgan, this 23-stand, 3-strand rod mill replaces a Garret mill, which was installed in 1902.

Billets are supplied to the mill from the rail mill. Rod sizes from 7/16 through 9/16 in. require a 4 3/8-in. billet, while for rod sizes over 9/16 in. a 5 x 5 billet is used.

Billets leaving the heating furnace are broken down into smaller sections. The 4 3/8-in. billet emerges from the 4-strand breakdown mill as a 2 1/2 in. square; 5 x 5 billets are rolled to 3 3/8-in. squares. The breakdown sizes are then sheared into two 34-ft lengths, and are immediately charged into a holding furnace which can accommodate 9 tons. Billets can be taken from the roll table prior to the holding furnace if so desired.

The holding furnace serves as a reservoir in feeding the 3-strand rod mill proper. Here correct temperature is maintained evenly throughout the billet length. The first stand, No. 0, rolls an oval and feeds into stand No. 1 which rolls a square. Even-numbered stands in the roughing

Highlights CF & I

Modernization Program

and intermediate train produce ovals, and odd-numbered stands roll squares, with the last stand feeding an oval section into the first repeater.

Large size rods, 9/16 to 1 1/8 in. diam, are fed into poured type reels which can handle coil weights up to 1000 lb. Smaller size rounds bypass this take-off and go through the 7-stand continuous finishing train for further reduction and are then coiled in 750-lb weights. The high speed finishing stand delivers at a speed of around 4000 fpm.

Coils are pushed out on a flat conveyor which transports the finished rods out of the main building onto a hook overhead conveyor that delivers the product into the cars on the shipping floor.

The coiled rod is further processed into wire either at Pueblo or other wire plants of the company. End products include nails, all types of fencing, mesh, screen, bolts, etc.

RIGHT—Control pulpit for the coilers, lower left. Delivery tubes into coilers on either side of the pit carry rod from the last stand of the finishing train to the coilers.

BELOW—Electrical equipment consists of 6600-v, 3-phase, 60-cycle power controlled by 12 sections of General Electric metalclad switchgear (left). On the right are the 1500-kw, 600-v generators which supply the mill drive motors through adjustable speed control equipment.



ABOVE—A complete communications system to all control stations through the mill is used to speed up operations and to keep the men on the floor informed.



Plant Modernization Aided By Machine Tool Rental Plan

By D. I. BROWN
Chicago Editor, The Iron Age



AGGRESSIVE machine tool merchandising methods of two midwestern companies have provoked interest and some strong comment. Rent, with the option to buy, is not new, but the 1949 souped up version of this technique is bringing plenty of business and the trade is following the plan closely. Both new and used machinery is involved and a cross section of midwestern builders and sellers show the trade is split into three camps: Those yet undecided about it, those who believe it's suicide, and those who declare it is the best business stimulant to come down the road in years.

Machine tool builders and buyers have long campaigned for a better break on depreciation of fixed assets, and some large machinery builders, though not yet conducting rental business, declare this method to be the first sensible attempt to do something about it.

Two Chicago companies are actively engaged. One is DoALL Co., selling contour saws and precision grinders. The other is Emerman Machinery Co., selling new and used machines.

Both plans are similar although the contract differs in minor details. DoALL's plan is a year old and Emerman started its program about a month ago.

Rental with an option to buy goes further than the usual contract or conditional selling practice. It is different than the standard 18 months credit plan, and in types of machines that have expendable parts it is a powerful boost to parts sales that the manufacturer wouldn't otherwise enjoy. The plan is legal and one company has cleared the matter with the U. S. Treasury Dept. Excerpts from the Treasury Dept. ruling are shown with this article.

In the past such ideas have not been inaugurated because investment houses have refused to participate. In both present cases, the credit paper is carried by the companies themselves. Chicago bankers told THE IRON AGE they still can't see it, but they advanced plans which, if instituted by the industry, might make such financial backing possible. Should a broad acceptable policy be worked out, some builders believe the

Two midwestern machine tool companies have inaugurated a merchandising program that involves renting machine tools to users and giving them the option to buy. Both new and used machinery is involved, and the U. S. Treasury Dept. has approved the technique. By being permitted to charge the monthly payments off as a direct expense, the net effect is a method of rapid depreciation of the equipment.

The Treasury Dept. Stated:

Upon inquiry concerning Rent-With-Option-To-Buy plans for industrial equipment, no Treasury Dept. ruling was intended to permit accelerated depreciation of such equipment. If there is any considerable disparity in the remaining amount to be paid for equipment and the fair market value at the time the option to purchase rented equipment is exercised, Treasury Dept. policy would be to consider the transaction a sale from the outset of negotiations. The ruling referred to in this article is applicable only to the specific DoALL contract involved, and individual rulings must be obtained for each specific Rent-With-Option-To-Buy plan.

machine tool industry will experience a healthy renovation that would benefit builders and buyers.

Big money is needed primarily because a large percentage of builders are small companies. Much as they might like to jump on the bandwagon, limited capital prevents doing so. Other than that, it appears that the only segments of the industry that probably can't use the plan to advantage are the makers of highly special types of machines.

DoALL's plan consists of the sales price split evenly into 36 monthly payments. The renter pays each month in advance and must keep the machine for a year. If he wishes to buy, 75 pct of all rental is applied against the original sale price. In effect, this is a program of accelerated depreciation. Current practice of writing off a machine in 10 years means that only 1/120th of the cost can be deducted each month. With rental and the option to buy, about 1/36th of the cost can be written off each month as a current expense, and this feature is proving a strong selling point. Approval of the U. S. Treasury has helped. Several builders have long consid-

Excerpt from Treasury Dept. Ruling On "Rent-With-Option-to-Buy" Sales

... "All the rental under the Agreements represent 'income' to the Company within the purview of section 22(a) of the Internal Revenue Code, so no part thereof is to be held in a deferred income account until the lease expires or the option to purchase is exercised. If the option is exercised, only the amount paid by the Lessee to the Company at that time . . . is to be used as the cost thereof. The rent is deductible by Lessee as an expense."

ered such programs, but have not gone ahead because they doubted that the Treasury Dept. would approve. Tax experts in Chicago pointed out that the government income tax take is better in the cases where the plan is in effect than it might be otherwise.

So far DoALL officials indicate that the plan has worked well. All renters thus far have renewed their contracts after the first 12 month period and indications are that most of them will eventually buy the tools.

Emerman's plan on used machinery is a little

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August 18, 1949

This advertisement appeared in THE IRON AGE offering to rent machinery.

different in that there is no minimum time of contract and the renter can buy or return the machine at any time during the contract period. The types of plants taking advantage of the used machinery fall in three major categories: (1) Plants wishing to experiment with new processes or products that require tools not on hand. (2) Plants wanting to accept subcontracts that require specific tools for a limited time. (3) New companies in the process of formation that cannot afford to spend at one time the entire amount necessary to equip a plant.

Two examples of actual contracts of rentals of used machinery are cited to illustrate how the plan works. A company rented a precision lead screw tapper that had a list price of \$4500 in 1942. The present purchase price of this ma-

chine is \$1950. The monthly rental amounts to \$54.16, which is the used machine price divided into 36 equal monthly payments. Again, as in the case of DoALL, the first month rental is paid in advance. The lessor loads the machine onto the truck or rail car and the lessee pays the freight to his plant. If the machine is returned and not eventually bought by the lessee, the lessee loads and ships the machine back at his expense.

In both plans the machine must be returned in the condition it was delivered less ordinary wear incident to normal use on the job. In the case of used machinery, the rental payment varies with use. The above figures were based on 8 hr a day use. For 16 hr per day use the user pays a 50 pct increase in the monthly rental rate, and if the tool is run three shifts a day the normal 8 hr rental is doubled.

So far, the most popular type of used machine rented has been open back inclinable punch presses. About 60 pct of the manufacturers now renting used machinery have indicated they eventually plan to buy the tool. In order to do so they merely apply the full monthly rental against the purchase price, pay the balance due plus $4\frac{1}{2}$ pct annual interest on the unpaid balance. To break even, Emerman officials told THE IRON AGE, the average tool would have to be out on rental for at least 18 months.

Much of DoALL's success, machine tool observers believe, is because the equipment sold consists of small items that can be universally used in many shops. However, in the case of Emerman, companies are renting rather large machines and even some specials. Emerman recently signed a contract with a company to rent a multiple spindle profiler that sold new for about \$15,000 seven years ago. The present price is \$6950 and this company is paying a monthly rental of \$193.06.

Cash Sales Preferred

The plan fits into the overall picture of machine tool selling roughly as follows: Companies still prefer to sell for cash. If the buyer hasn't the cash, they offer the standard time payment plan. If this won't work, the buyer might be given the advantage of the rental with option to buy if he wishes to use it. Some machine tool salesmen may not be too enthusiastic about pushing the last plan because commissions would not be collected in one lump sum, but would be spread out similar to the commissions collected by insurance salesmen.

Generally speaking, a survey of midwestern builders and sellers produced the following general conditions. Builders of special machines can seldom participate in such a program, much as they might want to, because an automobile model change or some shift in the market might mean that they would get back a flock of

rented special machines all at one time for which there is no possible market. Most makers of standard machine tools can safely utilize the program as a sales stimulant. Buyers would be happy to take advantage of the accelerated depreciation possibilities that are part of the program. Builders of machines of which there is a continuous repeat business of parts could almost afford to get the machines out on rental and not care if they ever sold them. One machine tool builder cited the example of some universally used grinders wherein the continued grinding wheel volume is more of a factor than the initial price of the machine. He qualified this statement by adding this is so particularly if these grinders are in types of industry which are more or less constant in their production and are making the types of products that don't historically show sharp fluctuation in demand.

Banks Wary of Plan

One large builder told THE IRON AGE such a plan would undoubtedly have been adopted long ago by his company if investment houses and bankers hadn't turned down such paper. Chicago bankers told THE IRON AGE that such plans in the past have been turned down because (1) banks don't know enough about this highly specialized industry, (2) there is no common yardstick that can be applied so that the risk can be calculated, (3) banks know of no indicator that insures them of a resale market of any consistency or one showing any historic pattern. A vice-president of a prominent Chicago bank, however, suggested a plan whereby eventual financial help might be secured. This executive suggested that the machine tool industry form their own credit association, establish a board of experts to classify machines, give the bankers a workable yardstick, establish adequate appraisal methods, and then create a permanent market or place to go with used machines. On such a basis this banker believed that financial houses would be sincerely interested.

There are many sales executives bitterly opposed to the plan as they feel the machine tool industry should not be made to help finance the capital expenditures of their customers. These men believe the plan will eventually backfire and would be very dangerous to manufacturers of expensive machinery where investments in each machine are large. Although they agree that the accelerated depreciation features are attractive, there are too many variables and unknowns in the whole equation that are dangerous. However, even those executives admit they are watching the progress of this type of merchandising very closely. In some cases even they feel the plan might be used in particular instances where the type of machine or the user constitutes a special case. On the other hand, this new sales plan could lead to the creation of an additional used machine surplus.

Precision Heat Treating

Small Steel Parts

at IBM



By HERBERT CHASE

SUMMARY: Heat treatment of large quantities of many varieties of business machine component parts requires the use of different kinds of continuous and batch type furnaces. Practices followed at the Poughkeepsie plant of International Business Machines and equipment used for large-scale production of high quality parts are described herein.

SMALL steel parts, such as are used in business machines, have to meet exacting specifications and, in some cases, freedom from warpage is so important that certain equipment, designed to avoid warpage while still doing effective heat treatment, is required. This equipment has proved its value at International Business Machines Corp. not only in saving straightening operations but in faster heat treating and with a closer approach to uniformity as well as with greater economy than was found possible with the best conventional methods used previously.

Although thousands of different parts are handled at the Poughkeepsie plant, each is put through a definite routine specified on a card for that particular part. Where troubles have been encountered, the card shows their nature and how they were overcome or what to avoid, hence the chance of recurrent difficulties is minimized.

Where conditions permit, operators are required to check the quality of their own work partly because this engenders pride in performance and partly because a specific and first hand knowledge of results makes for more intelligent operation. In other cases, separate inspectors have to check from step to step, but they work so closely with operators that the latter know at once when specifications are not met and so can avoid repetitive errors. In many cases samples kept separate from furnace loads are treated at the same time and are checked before the load is released for the next operation.

A large portion of parts heat treated are held within close dimensions, and/or must have smooth, scale-free surfaces. Most of the parts are precision types and, unless high quality is insured, the machines in which the parts are used will not function as required.

Naturally, maintenance of high quality tends to increase costs but the differential is minimized, as far as heat treatment is concerned, once a proper routine is set up. In the case of certain parts, satisfactory maintenance of quality required better methods and equipment, but when they were put in use, the net cost of heat treatment per part was reduced and straightening costs were virtually eliminated.

Although some controlled atmosphere furnaces are used, salt bath types are employed, choice depending upon the application involved. The salt leaves a thin coating that protects parts from oxidation during transfer from furnace to quench. Parts hung from rack hooks in an automatic salt bath machine are processed faster than

in batch type controlled atmosphere furnaces and, because both heating and cooling occur at the same rate on all sides of each piece, warping is minimized.

Similar factors account for using salt baths in a majority of the operations. In fact, all furnaces on one side of the department are salt bath types and another large area is devoted to an automatic salt bath furnace. Exhaust ducts serve all the salt bath furnaces and the general ventilating system keeps all other areas well supplied with fresh air. All parts are degreased in trichlorethylene before heat treating.

Besides salt bath furnaces, the larger of which are heated by internal electrodes, there are both batch and continuous controlled atmosphere furnaces, all of them equipped with electric resistance heating. All these furnaces can be connected to any of three generators that furnish the desired atmospheres. Several induction heating units are provided for localized heat treating.

Small, batch-type salt bath furnaces are gas heated but the larger salt bath furnaces have internal electrodes for heating. Two resistance-type furnaces handle chiefly batches of parts to be heat treated in fairly large quantities but yet not large enough to warrant continuous furnaces. Only those parts that can withstand bulk handling are processed in these furnaces and the accompanying quench tanks. Many of the parts are produced on screw machines. Some are stamped but they are mostly non-critical and must be sturdy enough not to warp in bulk heating or quenching.

Some austempering is done in resistance furnaces that have baths containing neutral salt at 1525°F. Heating time is 4 min and is followed by a salt bath quench for 14 min at 650°F. The quench is arranged for cooling in case its temperature is raised above 650°F by heat from parts quenched.

Parts handled in small lots or those that require case-hardening, generally are heated in small salt bath furnaces, all handling being manual. The furnaces are run at different temperatures and are used with quenches of different types, depending upon the specifications. One salt bath furnace is used entirely for hardening parts in small batches, each of which must be kept separate. Parts that may warp or be injured by handling in baskets are often hung from wires.

Large quench tanks used in connection with salt bath heat treating have baskets of perforated steel arranged for hydraulic lifting and lowering. The front walls of these baskets have two doors that can be swung open when the baskets are elevated. This makes it easy to unload the baskets into tote boxes that are hooked over the

front edge of the quench tank, as shown in fig. 1, and also saves such manual lifting as is required when no power lift is provided. Parts that are oil quenched are given a hot alkali wash before further processing.

One of the most unusual salt bath furnaces in the plant is a specially designed type, fig. 2, which, except for loading of the charge, is entirely automatic. This furnace is used for case-hardening low carbon steel parts that require a 0.002 to 0.003-in. case and that can be done rapidly in bulk though each individual batch is small. Heating is done in five small steel baskets each of which carries a given weight of parts. Immediately after loading, the basket is lowered into the salt bath where the rim of the basket rests in a horizontal dial that is indexed 72° every 1 to 2 min, depending upon the salt selected.

Motion of the dial is intermittent, but when each basket reaches the loading-unloading station, the basket is automatically lifted by a pivoted arm which, after stopping a few seconds above the bath for salt to drain off, swings through about 120° and discharges its load into an oil quench. Then the basket is swung back and is recharged just before entering the bath for indexing through the next cycle.

The bath contains 18 pct sodium cyanide and is held at 1450°F. All that is required of the operator is to weigh out each load in a scoop and deposit this load in the basket. Heating is rapid and progressive, the heat being supplied by submerged electrodes, and controlled by thermostatic means within close limits. Since timing is automatic, each batch receives identical treatment



FIG. 1—Removing parts from the elevated basket of the quench tank used in connection with the automatic Ajax salt bath furnace.



FIG. 2—Looking across the quench tank of the automatic Ajax furnace. One basket, from which parts have just been discharged is shown on the swinging arm that lifts baskets in succession from the furnace background.

and the volume handled is fairly large.

Of particular interest, for heat treating parts stamped from SAE 1050 cold rolled steel, 0.040 in. thick, is the automatic furnace shown in fig. 3. This furnace is a progressive conveyerized type and employs racks made entirely of Inconel. The racks have removable horizontal bars each provided with hooks evenly spaced from end to end. On each hook is hung one part. As the parts are lowered vertically into the successive baths, heating and cooling are the same on both sides of each part, hence no significant warpage occurs. This is of great importance, since it overcomes the warpage that was formerly encountered when the parts were heated in boxes in a controlled atmosphere furnace and shaken by hand from the box into the quench.

In the earlier setup, trays were loaded by hand for treatment in box type batch furnaces, and parts had inner ends overlapping about $\frac{1}{2}$ in. to allow a space between the remaining length of adjacent parts. This arrangement was slow to make, and after heating it proved impossible to insure quenching without warpage because parts shaken from trays into the quench did not enter the quench vertically or in such a way that cooling was the same on both faces.

Racks now used are loaded by hand. For loading, the Inconel bars are placed on supports, and when each hook has been filled, are shifted to the racks used for heat treatment. The latter are held vertically in a dolly, which when filled, is rolled to the loading station of the automatic furnace (fig. 3). The racks are hung on con-

veyer bars that are moved by chains similar to some types of automatic plating machines.

There are two sets of chains. One pair, moving slowly and continuously across the top of the furnaces and the tanks beyond it, advances racks horizontally through successive baths. The other chains, moving intermittently, elevate the racks, move them from bath to bath and lower them into successive baths. Intermittent transfer chains move only when the respective drive motors are actuated by limit switches that are closed by horizontal motion of bars which support the racks of parts.

Racks are loaded on conveyer bars as they are being elevated, at the start of the line. Then the racks are lowered into the salt bath, which is heated by internal electrodes and is held at 1525°F by thermostatic control. The neutral bath is sodium potassium chloride, rectified with borax to prevent decarburizing of parts. Racks move through the bath in about 4 min and are transferred into a salt quench at 650°F. This quench is resistance heated but also has a water jacket that is brought into use automatically by a pump if the heat absorbed from parts quenched raises the temperature above 650°F. Time in the quench is 14 min after which racks are elevated and then lowered into a cold water rinse. The sudden chilling causes most of the salt film to chip off but a hot water rinse follows immediately and removes any salt residue. This hot rinse also heats the parts and the water on the parts evaporates before the racks are unloaded. In humid weather, about 5 pct of a rust inhibitor

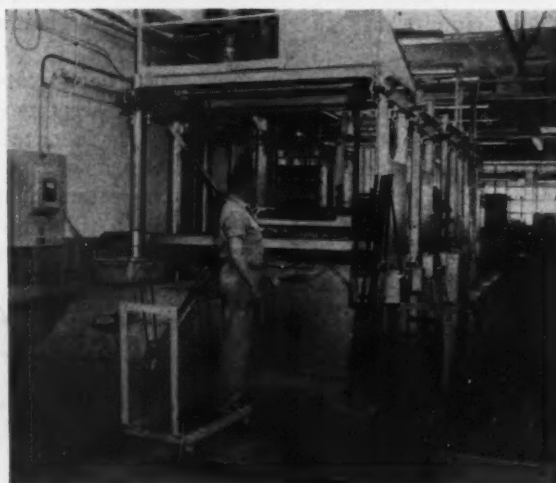


FIG. 3—Automatic Holden conveyerized salt bath furnace as seen from the loading end where racks of parts are hung from removable bars that transfer the racks through successive baths.

is added to the hot water to afford protection against rusting before subsequent processing.

After racks of parts are rinsed, the racks, still on conveyer bars, are automatically transferred to a frame having an inclined support down which the bars slide and on which the bars remain until the racks are taken off by hand and are put in

Precision Heat Treating

Continued

dolies for return to the loading bench. Before this return, however, the hooked bars of the racks are removed and are given a twist by hand that causes the parts on the hooks to drop into a tote box. Conveyor bars go into another dolly that is wheeled back to the loading end of the conveyor for the next trip through the furnace.

With this setup, hardness specifications of 42 to 44 Rc are held. Warpage is so nearly eliminated that no straightening operation is required before grinding. This saving is important but is increased by saving the time of one operator as compared with prior batch type heat treatment. Actually, the time for the heating cycle is reduced from 30 min to 4 min, and where only 600 pieces were processed per batch before, 1260 pieces are now heat treated in the same time. Another important advantage is that no decarburization occurs, as it did to some extent in batch treatment. Each part has a pivot hole that is ball sized after heat treatment and if any decarburizing occurs, the wear in this hole may become excessive and affect type alignment adversely.

Racks used for heat treatment are somewhat expensive and it was expected that their life, or at least that of the wire hooks, would be short. Actually, racks that have now been in use for 2 years show almost no deterioration, even the small hooks being in excellent condition. This means, in effect that rack costs can be amortized over many years the cost per rack-year being fairly low.

Much of the central portion of the heat-treating department is within a pit area to accommodate pit type carburizing and tempering furnaces. Electric furnaces (fig. 4) using gas atmospheres with parts handled in baskets are operated at an average temperature of 1650°F, and apply case depths ranging from 0.005 to 0.030 in., depending

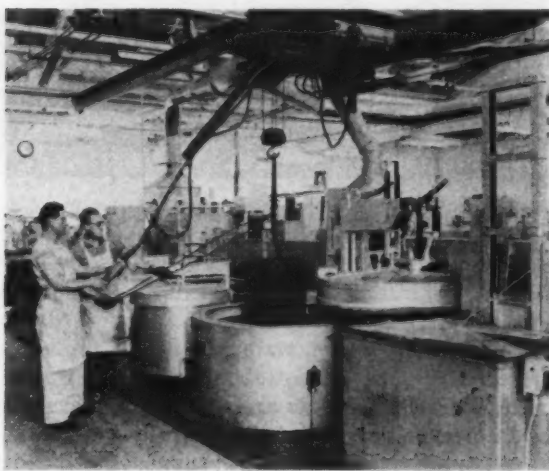


FIG. 4—Lowering a batch of parts into one of the Homocarb furnaces which are served by a light crane.

upon specifications. Usually 0.010 in. is applied in the first hour, the rate being slower per unit of depth as the depth increases. Some parts are quenched and some are cooled in the furnace or in cooling pits if subsequent machining is to be done.

For tempering, four pit-type furnaces are provided. All pit units are arranged for connection to any of the three gas generators which also supply other atmospheric furnaces. The generators produce neutral endothermic gas; in each, the air:gas ratio can be changed to suit the steel to be processed.

Three electrically heated box type furnaces are employed chiefly for miscellaneous parts.

Two electrically heated continuous controlled atmosphere furnaces (fig. 5), both having cooling

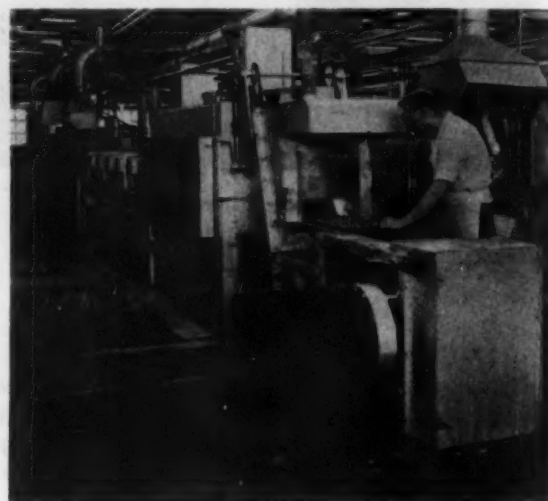


FIG. 5—Lindberg furnace employed for continuous heat treatment in controlled atmosphere.

chambers, are used chiefly for copper brazing but can be employed for any continuous job, such as annealing, when the quantities of parts are sufficient for economical treatment in furnaces of this type. One furnace is equipped with a woven wire belt conveyor arranged for variable speed of 1 to 8 hr per furnace transit. The other is a pusher type.

All induction heating is done in vacuum tube and spark gap machines. One of these is a two-station 20 kw general purpose machine like that shown in fig. 6. Two are special purpose machines one of which used as conveyor to carry the ends of certain parts through a channel-like coil and the other is equipped with a magazine to feed parts having a projecting tip that is heated in a similar channel coil.

Most jobs performed on the general purpose machines are heated by coils made up in fixtures on the order of those shown in fig. 7. In general, the parts heated are dropped by hand into an oil quench below the coil, but some fixtures have spray heads for water quenching, the water being supplied automatically at the proper point in the cycle. Some parts are annealed locally by induc-

tion heating and are merely dropped into metal baskets for slow air cooling. One 10-kw and one $\frac{3}{4}$ -kw machine are used for localized heating of a few small parts.

Some critical alloy steel parts, for example 4615 steel, which are subject to repeated shock loading in service, are shotblasted after a hard superficial case has been applied. The resulting increase in endurance limit has proved highly beneficial in stopping failures that previously

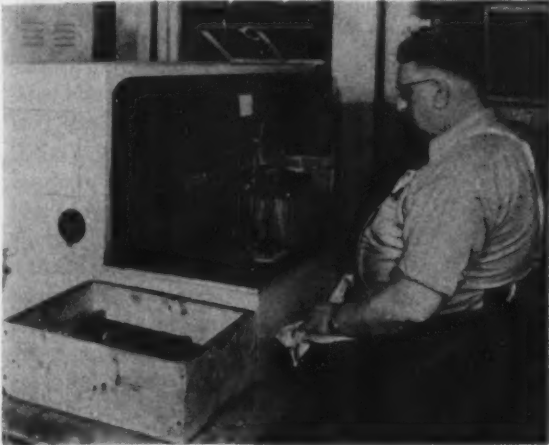


FIG. 6—One of the Thermonic induction heating machines employed for localized heat treatment of various parts.

occurred. Although this blasting is not a part of heat treating, it is done in the same department.

Where so large a variety of parts are heat treated in accordance with so many different specifications, it is essential that operators know in each case precisely what procedure is specified. In consequence, duplicate cards are supplied for each part to be heat treated and these cards are filed by part number. When a batch of a given part is received, one file card of corresponding number is placed with the batch and remains with it until each operation specified has been completed. As the respective types of heat

treatments fall into several definite classifications, the top edges of cards are color coded for quick identification and the operators know at a glance to which type of furnace or other equipment the batch must go.

Each card has columns that indicate the processing specified, temperature, hardness, depth of case, etc., tell which type of furnace is to be used, and whether racking, stringing, basket or tray is to be employed. Each item needing attention is circled and special precautions are noted. Thus the card gives full instructions for each batch. The master copy is kept, by part number, in the file when the copy accompanies each batch through the routine specified. When the batch has passed inspection the copy is returned to the file.

When a given item of the treatment specified is completed and passes inspection, the operator is required to deliver the batch to the point where the next specified item is done. The result is that

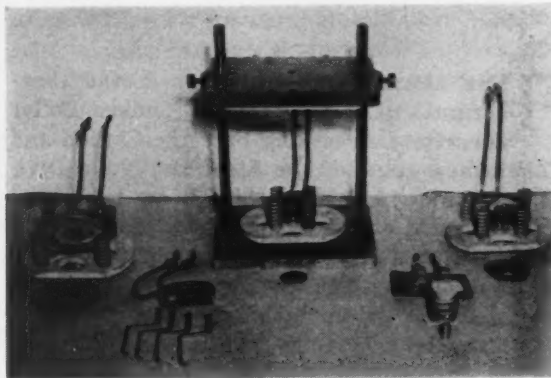


FIG. 7—Typical induction heating fixtures (with coils) used in the heat treatment of the parts shown.

batches move through the department regularly and reach final inspection ready for checking. When batches pass inspection they are dispatched to other departments that are scheduled to receive them.

Heliwelding Aluminum Trailer Roofs

ALUMINUM can be successfully welded using the inert-gas, tungsten-arc process, principally because the use of this process eliminates the necessity of fluxing.

A recent application of the process to aluminum was made by the C. Loznak Co., Flint, Mich., for the Mobile Trailer Co. Using a Heliweld machine holder, mounted on an Airco No. 10 Radiograph, this company fabricates aluminum trailer roofs on a production basis. The roofs are made of 3S HH aluminum sheets, 0.04-in. thick. Each sheet is 4 ft wide and 6 ft, 10½ in. long, and seven sheets are required for each roof.

The sheets are placed on a work table large

enough to hold seven sheets. The Radiograph track is secured to the top surface of an 8-in. channel iron, flanges down, located alongside the top section of Heliwelding fixture. Hose and cables are suspended from trolleys.



Welding aluminum trailer roof sections.

How Timken Expedites STEEL MILL SCRAP PREPARATION

By Frank C. Wier

Supt., Material Handling,
Steel and Tube Div.,
Timken Roller Bearing Co.,
Gambrinus, Ohio

THE storage yard for scrap of the Gambrinus, Ohio, plant of the Timken Roller Bearing Co., serving both the Canton and Gambrinus plant of the Steel and Tube Division, is unique in layout. The theory behind its development was that physical handling of scrap materials could be reduced if the excess of all producing departments were gathered in one storage yard and that operations, such as cutting, should be performed in the yard itself rather than at the operating department. It was deemed to be more efficient to transport ma-

terial which is to be prepared to a central handling and scrap preparation yard rather than to move the mobile equipment to the material. In this way equipment is not idle when being moved.

The main cutting operations are laid out along railroad tracks at the Gambrinus yard. There are nine cutting stations, all equipped with four-outlet oxygen headers.

The Linde powder-cutting process is used to cut stainless and slag-incrusted scrap. In the powder-cutting process an iron-rich powder is



FIG. 1—Cutting a slag-encrusted openhearth pancake with an Ozweld AC-4 powder cutting blowpipe.

SUMMARY: The author describes how Timken handles scrap preparation at the Gambrius plant where scrap from all producing departments is gathered into one storage yard and use of specialized control equipment gives an efficient and economical operation.

blown into the oxygen stream from outside the preheat flame. The oxyacetylene preheat flame heats the powder to ignition temperature. Ignition of the powder creates a high-temperature reaction. A combined melting and fluxing action continuously removes refractory oxides as the cutting proceeds. Thus, materials oxidation-resistant to the normal oxyacetylene flame can be cut with ease and at speeds comparable to cutting equivalent thicknesses of carbon steels.

Actual powder-cutting of a slag-encrusted open-hearth pancake is shown in fig. 1. The pancake is about 10 in. thick; the length of the cut measured 40 in. The reduction of scrap stainless steel ingots to charging-box size is also accomplished by the powder-cutting technique.

Standard blowpipes may be varied in length to suit operating conditions. Thus, blowpipe lengths of 26 in. (shown at right, fig. 2) and 32 in. (fig. 3) are used by operators to keep them as far as possible from the heat of the reaction zone when heavier scrap is being cut.

Scrap is brought in at night and distributed to the various cutting stations adjoining the

track. The cutting operations are performed during the day and the prepared scrap is removed at night by a magnet equipped locomotive crane. Replacements are made of unprepared scrap for cutting the following day. Any potential delays during the day while cutting operations would be in progress are thus eliminated.

One of the principal obstructions to obtaining volume production in handling scrap is the lack of an efficient system for supplying oxygen and acetylene to the work locations. At this Timken Yard, all cutting stations are supplied with oxygen through a piped distribution system served from a Cascade oxygen unit installed by the Linde Air Products Co. Although acetylene has been supplied from cylinders, generator acetylene can be supplied from a nearby source. Generators are currently being operated to supply acetylene to a piercing mill nearby.

Efficiency of the yard has been increased considerably by having ready and available everything operators need to enable them to cut



FIG. 2—Cutting scrap from a Bailey Bridge to size. Operator on left is using a 20-in. blowpipe, man on the right is using a 26-in. blowpipe.



FIG. 3—When cutting heavier scrap an extra long, 32-in. blowpipe is used to keep operator as far as possible from the heat.

continuously. Thus, delays are minimized, and there is no reason for a man to stand around waiting for anything. For example, when the cutters are finished at the end of the day the

hoses are coiled up and put into the station house with the cutting equipment. Nothing is disconnected. Considerable time is saved in the beginning and at the end of the day.

Electronic Contour Machining System

AN electronic instrument, which can follow the lines of a drawing with an electric eye and guide a machine tool to cut out metal parts according to the drawing, has been developed by General Electric Co.

This contour following system, which is essentially an electronic servo system that emits signals to control the lead screw, is connected to a machine tool, the slave unit. As the electric eye moves along the lines of a drawing, the machine tool's cutter reproduces in metal the shape that was traced, as shown in the accompanying illustration.

This unit is expected to simplify the manufacture of irregularly shaped parts such as cams, which are difficult to make by hand controlled machining methods. With the device, production of any shape can begin as soon as an accurate drawing is made, and it will eliminate the necessity of dimensioning drawings and much of the layout time, as well as the need for templates and patterns.

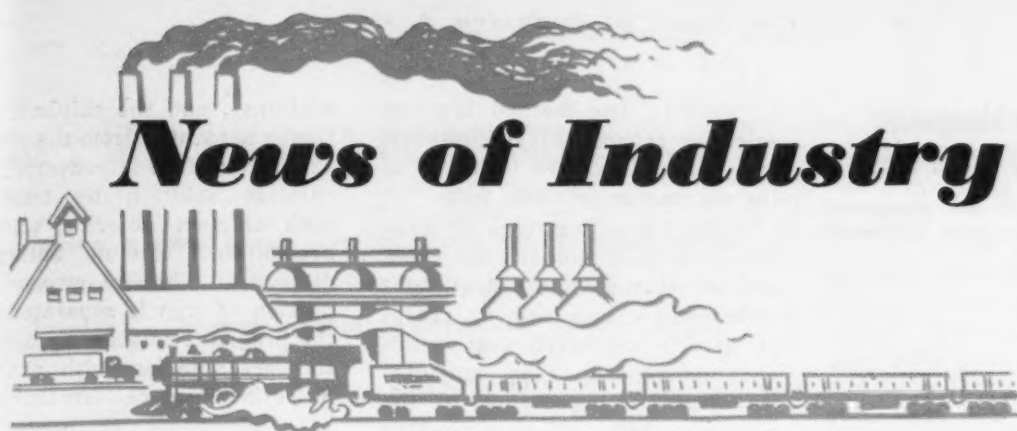
The line of a drawing is scanned through a low power microscope at a speed of 0 to 6 ipm, and the unit is capable of following a line in the form of a closed loop with a diameter as small as 0.06 in. When the line is in the center of the microscope's field, the eye sends out impulses at a frequency of 60 cycles per second which are picked up by a 26 tube tube electronic circuit. If the line is not in the center of the microscope's field of vision, the phasing of the impulses vary and the circuit instantly sets

mechanical guides into motion to bring the eye and microscope back into position. The instrument does not vary from the drawn line by more than 0.003 in.

A set of change gears provides a range of reduction ratio between drawing and finished part from 3.75 : 1 to 60 : 1. This range reduces the error to less than 0.001 in. The equipment operates on 220 v, 60 cycle, 20 amp of electricity, and it will perform satisfactorily within an ambient temperature range of 65° to 104°F.



Electronic contour following system equipment showing the scanning mechanism, head control panel, the guide ways and their associated drives.



News of Industry

Yugoslavia Gets Loan

Washington—A loan of \$20 million for Yugoslavia has been approved by the Export-Import Bank. It will be spent for essential American materials, equipment and services.

Of the total, \$12 million is to be made available immediately for materials and equipment for modernization of the Yugoslavian mining industry. The remainder of the credits will be made available as additional needs are approved by the bank.

Upon mechanical improvement of the mining industry it is hoped to get copper, lead, zinc, bauxite and mercury in return.

Volta Redonda May Get Export-Import Bank Loan

New York—The application for the \$17 million Export-Import Bank loan to be used for expanding the Volta Redonda plant is receiving active consideration, according to Herbert E. Gaston, chairman, of the bank.

"We have been greatly pleased," said Mr. Gaston, "by the progress made at Volta Redonda reported to us by General Sylvio Raulino de Oliveira, director general of the (Brazilian) National Steel Co."

Total investment in the Volta Redonda plant has reached \$175 million. Of this amount, \$130 million represents the investment of Brazilians. There is outstanding a \$45 million Export-Import bank loan.

Steel Board Report Surprises Industry

Rules against fourth round wage boost . . . Agrees with union on insurance . . . Urges pension study start now . . . Sets total cost increase at 10¢ per hr.

New York — That the findings and recommendations of the Presidential steel fact-finding board were a surprise to the steel industry is now an acknowledged fact. The board: (1) Opposed a wage increase; (2) ruled pensions not bargainable under the contracts at this time; (3) approved pensions but deferred bargaining on them and recommended half the size of the pension demanded by the Steelworkers; and (4) suggested cutting a third off the size of the union's social insurance demands. The smaller steel companies got their point across: Unlike its recommendations on bargainability and wages, the board noted that its pension and insurance recommendations were not intend to apply automatically to individual companies. Finally, there was sharp criticism of industry-wide bargaining by the Steelworkers.

What did the union get out of it? It lost its plea for a wage increase, but this was hardly a surprise to union leaders. As far as the board opinion is concerned, the union won a victory on its social insurance claim. It did not get all it asked for—in cents per hr — but it never expected to.

Though it lost its argument that pensions are bargainable under the terms of the reopening clause it won an opinion that they are "continuously" bargainable under the law. Even if pensions had been agreed upon in July it would have been 1950 before a plan could have been put into effect.

For Non-Contributory Insurance

For its part, the industry lost its contention before the board that social insurance should be contributory. It got a slap on the wrist for paying for postwar expansion almost entirely out of profits instead of long-term borrowing. This from a board that seemed to show more consideration for the stockholder than had most of the steel company officials

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CF&I Makes First Cutback

Pueblo, Colo.—Colorado Fuel & Iron experienced their first cutback in steel operations over the Labor Day weekend at their Minnequa works. Up until this time, Minnequa has been running at capacity. Cutbacks are due because of the slowup in demand for rails and track accessories, and some curtailment in the buying of wire products.

Process Recovers Manganese Oxide From Lower Grade Ores

Concentrate of 60 pct manganese obtained using standard equipment

Montreal — America's dependence on foreign sources, including Russia, for strategically important manganese ore may eventually be reduced as a result of a new chemical process for recovering manganese from low grade ores.

This new process was described at a regional conference of the American Institute of Chemical Engineers by Richard D. Hoak, senior fellow, Mellon Institute, Pittsburgh. The report was prepared in collaboration with James Coull, head of the Dept. of Chemical Engineering, University of Pittsburgh.

Needed for Steelmaking

Mr. Hoak declared that the new process made possible economical recovery of a concentrate containing upward of 60 pct manganese from ores ranging as lean as 10

to 20 pct. The method involves selective removal of sulphur and iron impurities, and isolation of the manganese in oxide form.

About 1.6 million tons of manganese is used annually for steelmaking in the U. S. Steel can't be made by known methods, except at greatly increased cost, without manganese. This indicates its strategic importance to the economy. Although this country possesses large reserves of low-grade manganese ore, deposits suitable for direct smelting to ferromanganese are very scanty. This situation was highlighted several months ago when Russia started restricting shipments of manganese to this country. At that time it was necessary to take steps to assure ourselves a supply of the mineral from other sources.

The new process for production of manganese oxide concentrate involves four principal operations: (1) Ground ore is leached with pickle liquor (produced in large volume in certain steelmaking op-

erations), and the sulphate solution is separated from the gangue. (2) The sulfate is converted to a chloride solution by treatment with calcium chloride, and the precipitated calcium sulfate is filtered off. (3) The optimum proportion of iron is separated from the pregnant solution by differential precipitation with chalk or pulverized high-calcium limestone. (4) Manganese is precipitated from the solution with high-calcium lime slurry. The precipitate is filtered off, washed and dried as product, and the calcium chloride solution remaining is concentrated for reuse.

The process is said to require only the simplest kind of standard equipment. A plant designed to process 48 tons of ore per day is quite compact, and calls for unit equipment of modest size.

Will Resume Hearings On Industrial Monopolistic Trends

Washington — Public hearings on monopolistic trends in industry will be resumed on Nov. 1, Rep. Celler, D., N. Y., said recently.

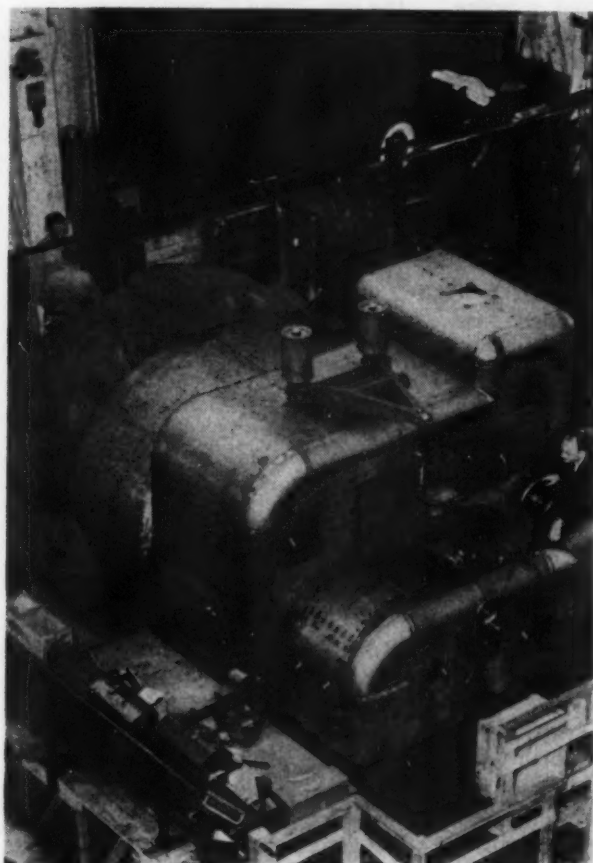
Witnesses representing both labor and management will be called to air their views on what Mr. Celler terms "a dangerous tendency toward concentration of economic power."

Mr. Celler is chairman of the House Judiciary Committee and also of a special investigating subcommittee which is exploring the monopoly question with a view to writing restrictive legislation.

The hearings are expected to run for about 3 weeks.

Orders Corn Storage Bins

Pittsburgh—A \$400,000 order for 30 steel corn storage bins has been placed with the Blaw-Knox Co., by the Commodity Credit Corp. Ten of the buildings are scheduled for delivery by Sept. 21. The 30 universal farm buildings, each 40 ft by 96 ft by 16 ft high, will have a capacity of 1,350,000 bu of corn.



MORE POWER: Ready to do an important job for southwestern electric power consumers is this 11,500-kw turbine, recently completed at Westinghouse Electric Corp.'s Sunnyvale, Calif., plant. The unit will be coupled to a generator at the Lordsburg, N. M., plant of Community Public Service Co.

Farmer's Wife Still on a Buying Spree

Buying in farm areas is at a strong steady pace which looks normal . . . It is motivated by keeping up with the Joneses . . . Salesmen could do better—By TOM C. CAMPBELL

Bath, N. Y.—The farmer's wife is putting the finger on the market researcher's slide rule. She is cracking the crystal gazer's ball. And she is generally lousing up the urban economic experts. She is still on a buying spree. And what's more it looks as if she doesn't believe everything she reads in the papers. All she knows is that the Joneses have something she wants and she is going to get it. And why not? The farmers have more money than they ever had before.

Early this year the farmers were "advised" that there might be a large fourth round of wages, labor troubles and lower prices. For a few months they stopped buying. About the beginning of July their wives thought it about time to stop listening to all that prattle. The buying started again. Now that the barns, the machinery and the farm were in pretty good shape accent went on getting new things for the home.

Purchasing Power Strong

That phase started more than a year ago. It is still going strong. Today, according to those who know in this small hamlet—Steuben County seat—the purchasing power of the farmer has only begun to be felt. Stoves, refrigerators, washing machines, dishwashers, kitchen units, furniture, paint, paper and everything else that thousands of manufacturers make are on the active list.

But there is one thing that stands out. Salesmen could be selling more. Dealers and distributors have cold feet and pay more attention to "business news" than they do to the "I want this and that" from their customers. Sales are lost, time is lost and the customer goes somewhere else. It is

the same story in Penn Yan, in Dundee and in Watkins Glen—all farm centers where business shows no sign of any depression.

Hardware dealers are well stocked except on items such as cheap electric refrigerators. The farmers want a bargain for their money and they are willing to buy when they see it. High priced appliances are still on the floors of hardware stores and distributors. But when you look for the electric refrigerator which sells for less than \$200 you can't find it. It's gone. There is a shortage.

But there is no shortage in demand. Old type washers go fast and some people can't keep them in stock.

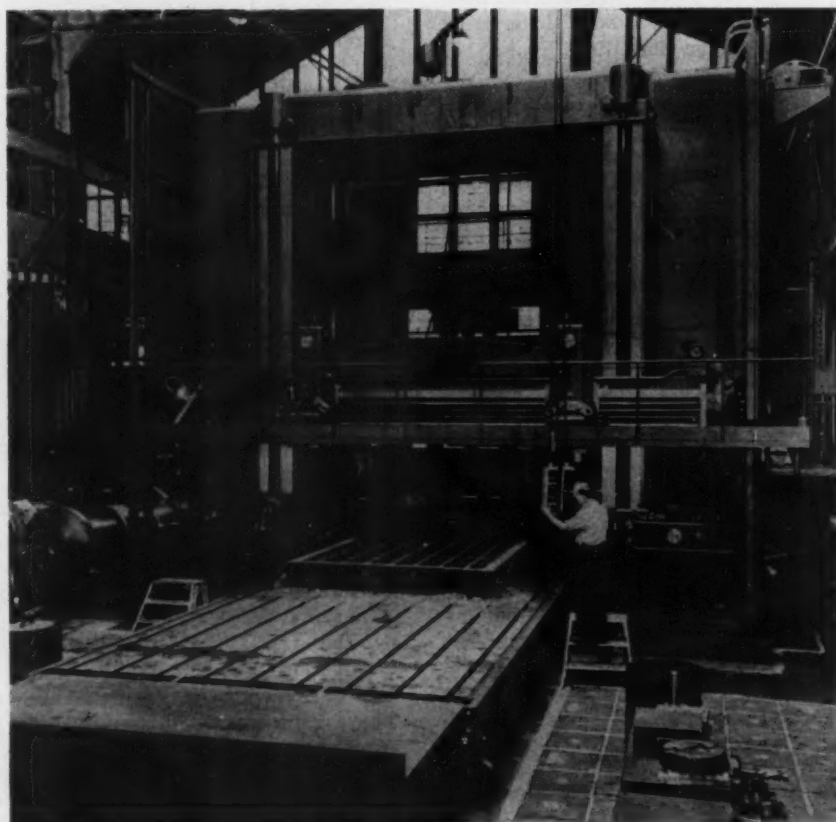
Inner spring mattresses go like hot cakes with the only delay encountered in lack of stock by dealers and furniture people who can't believe what they see. In some areas there is a soft spot in buying because of the drought. But that is temporary. Most farmers have their mortgages in good shape. They have money

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ASTE Chooses Philadelphia

Detroit—Philadelphia's Convention Hall and Commercial Museum will be the site of the 1950 Exposition of the American Society of Tool Engineers, according to an announcement by Robert B. Douglas, president of the ASTE. The date is Apr. 10 to 14 inclusive.

PRECISION IN SIZE: Capable of shaving a sliver 1/1000 of an in. thick from a steel block the size of a railroad boxcar, this new planning and milling machine recently was installed at General Electric Co.'s Schenectady works. Capable of functioning as either a planer or milling machine, it eliminates the task of transferring materials to two machines, when both operations are required.



INDUSTRIAL SHORTS

HOUSEWARMING — A new building at Mount Royal, on the outskirts of Montreal, has been officially opened by A. C. LESLIE & CO. LTD., steel and metal warehouse. The new structure combines office and warehouses and covers an area of more than 163,000 sq ft.

TURKS BUY — Announcement has been made that the Turkish Government has ordered more than \$1½ million worth of Jeeps, 4-wheel-drive trucks, station wagons and spare parts from WILLYS - OVERLAND EXPORT CORP., Toledo.

AT YOUR SERVICE — A new advertising and public relations agency, CUMMINGS & HOPKINS, located at 1504 Guardian Bldg., Detroit, has been formed by Glenn H. Cummings and Nat W. Hopkins. Mr. Cummings is a public relations consultant, serving Continental Motors, Nash-Kelvinator and Lakey Foundry. Mr. Hopkins has been Continental Motors' advertising manager since 1945.

NEW ADMINISTRATION — A controlling interest in the Penn Harris Steel Co., Harrisburg, Pa., steel warehouse, has been purchased by the CHARLES DREIFUS CO., Philadelphia. Penn Harris was established a few years ago by John E. Miller and Stanley Hughes, who will remain with the company as operating heads.

BETTER SERVICE — Air Reduction Sales Co., New York, has appointed the ESSEX WELDING EQUIPMENT CO., INC., Newark, as their dealer for Newark and surrounding areas. The Essex company has consolidated with the W & E Supply Co. to serve a more complete line of welding products.

MORE BRASS — Construction of a 40,000 sq ft warehouse in Chicago has been started by SCOVILLE MFG. CO. The company, with its principal plant located in Waterbury, Conn., manufactures brass goods.

CHANGES HANDS — The Superior Sheet Steel Div. of BORG-WARNER CORP., Chicago, has sold its plant near Canton to the Louis Berkman Co. of Steubenville, Ohio. Plans for the use of this plant are still indefinite.

SWISS MACHINES — Tornos Works, Ltd., Moutier, Switzerland, has appointed HAUSER MACHINE TOOL CORP., Manhasset, N. Y., as their exclusive U. S. factory representative for their high speed precision automatic screw machines, precision wood-screw machines, cam shaping machines and accessory cam-making equipment.

IT'S COLD INSIDE — Claimed to be the largest display of refrigeration and air conditioning units, equipment and parts will be on exhibit at the sixth All-Industry Refrigeration & Air Conditioning Exposition sponsored by the REFRIGERATION EQUIPMENT MANUFACTURERS ASSN. in Atlantic City on Nov. 14-18.

TOOLS FOR TEXAS — Carboly Co., Inc., Detroit, manufacturers of cutting tools, grinding wheels and abrasives, has appointed the TOOL SUPPLY & ENGINEERING CO., Dallas, as a distributor for Dallas and the Northern Texas territory.

WESTERN OUTLET — The C. F. Bulotti Co., San Francisco, has been appointed a distributor by the LANDIS TOOL CO., Waynesboro, Pa., manufacturers of precision cylindrical grinders. They will cover northern California and western Nevada.

Farm Buying Spree

Continued from Page 119

in the bank. But they will and are spending it for more than city statistics would indicate.

There is considerable criticism in the village and hamlets of large scale manufacturers and distributors who don't know enough about selling or enough about farm buying potential. The stories were all the same. Not enough selling and not enough of the units which go for lower prices. Farmers don't want \$425 appliances. They want those below \$200. When they see them they buy them. They feel the same way about other things.

Hardware Sales Good

They are not buying farm machinery lickety split. But when they go to the centers like Bath and Dundee they look over machinery in the dealer's yard. They are being sold but they are not rushing into it. They have to be convinced and they are being convinced because they are still buying farm machinery.

Hardware stores are selling everything that goes with perking up the home on the farm. The business is steady but not of boom proportions. It looks normal and it is far above prewar sales.

Aluminum Replacing Galvanized

Galvanized sheet steelmakers are going to have a tough time regaining their previous market for roofing and siding. The aluminum people have done a good job during the shortage of steel. Farmers are talking aluminum roofing as they used to talk about galvanized material. They don't see much of the latter. Something is missing but the farmer tells visitors that he buys what he can get.

It may be that the farmer's wife is responsible for that mysterious something which keeps business from taking the dive the experts have predicted. She is doing collectively one of the best buying jobs in the country—almost unaided by salesmen.

Inter-Plant Railroad Strike Threatens Monongahela Output

U. S. Steel Corp. starts banking furnaces before strike deadline.

Pittsburgh—An inter-plant railroad strike that would have crippled operations at Monongahela Valley plants of U. S. Steel Corp., scheduled to begin early this week, was put off for 2 weeks after President Truman intervened.

If carried through, the walkout would mean loss of 19,500 ingot tons of steel per day and quickly force shutdown of all steelmaking operations.

A Presidential telegram to the Brotherhood of Railroad Trainmen deferred the strike deadline. It is expected that further efforts will be made by the White House to get the union to agree to arbitration.

The BRT scheduled the U. S. Steel walkout for Tuesday after refusing to join with Union Railroad Co., on a company proposal to submit two important issues still in dispute to arbitration. The company said the issues involved the matter of detailed job descriptions and physical examinations.

When the union made known its strike decision, U. S. Steel Corp. operating officials announced plans to begin banking blast furnaces from 24 to 36 hours in advance of the deadline at the Clairton, Duquesne, Homestead and Edgar Thomson works, which employ more than 30,000 workers.

Both are pessimistic

A strike was also scheduled by the BRT on the Monongahela Connecting R.R. which serves Jones and Laughlin Steel Corp. Presidential intervention was expected to delay this walkout for at least 60 days. The dispute grew out of a discharge case.

U. S. Steel's dispute goes back some months. A strike was voted last May, but was averted when a Presidential fact-finding board moved in and held hearings lasting 23 days. The board announced its recommendations July 29—Re-

commendations accepted in full by the company, but only in part by the union.

The BRT represents about 1200 conductors, brakemen, yardmen and switchmen. Approximately 2300 others also are employed by the line.

Boost Ball-Point Output

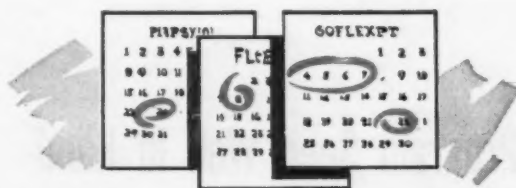
Philadelphia—Production of 1-millimeter balls for ball-point pens is now double the rate of a year ago, SKF Industries, Inc., report. The company says it is possible that output will be increased still further by the end of the year.

Seven Small Tool and Die Firms Pool Their Resources

New corporation offers a broader service to industry and government

Hartford, Conn.—Seven small Connecticut tool die and contract manufacturing shops have pooled their resources to form Connecticut Mechanical Industries, Inc. The new corporation, with combined assets of more than a million dollars, is capable of large-scale production of a wide variety of tools, dies and precision instruments.

This novel move unites the varied facilities and skills of a



Dates to Remember

- Sept. 18-23 American Chemical Society, national meeting, Atlantic City, N. J.
- Sept. 21-24 National Assn. of Foremen, annual convention, Detroit.
- Sept. 25-28 American Mining Congress, metal mining convention, Spokane.
- Sept. 25-Oct. 1 American Institute of Mining & Metallurgical Engineers, midyear meeting, Columbus, Ohio.
- Sept. 26-28 National Electronics Conference, Chicago.
- Sept. 27-30 American Society of Mechanical Engineers, fall meeting, Erie, Pa.
- Oct. 3-4 Steel Founders Society of America, fall meeting, White Sulphur Springs, W. Va.
- Oct. 3-5 American Coke & Coal Chemicals Institute, annual meeting, Skytop, Pa.
- Oct. 3-6 Assn. of Iron & Steel Engineers, annual convention, Pittsburgh.
- Oct. 4-6 Industrial Packaging & Materials Handling Exposition, annual convention, Detroit.
- Oct. 10-14 American Society for Testing Materials, West Coast meeting, San Francisco.
- Oct. 11-14 American Standards Assn., annual meeting, New York.
- Oct. 12-15 Electrochemical Society, semiannual meeting, Chicago.
- Oct. 13-15 Foundry Equipment Manufacturers Assn., annual meeting, White Sulphur Springs, W. Va.
- Oct. 17-20 American Gas Assn., annual convention, Chicago.
- Oct. 17-21 National Metal Congress, Cleveland.
- Oct. 24-26 American Gear Manufacturers Assn., annual meeting, Chicago.
- Oct. 26-28 National Metal Trades Assn., annual convention, Chicago.
- Oct. 27-28 Gray Iron Founders Society, annual meeting, Chicago.
- Oct. 27-28 Porcelain Enamel Institute, annual meeting, French Lick, Ind.
- Oct. 30-Nov. 2 National Tool & Die Manufacturers Assn., annual meeting, New York.

group of tool and die shops into a single productive unit. It offers private industry and government purchasing agencies a broader service than has been previously available through any single shop in the New England area, according to John H. Dowd, president of the corporation and president of Hohns-Hartford Tool Co.

Useful for Mobilization

Mr. Dowd said, "Government procurement agencies now have a valuable new asset at their command for the rapid mobilization of the tool, die and contract machine industry. Without this industrial mobilization during a national emergency would be seriously handicapped."

He indicated that the present steps may eventually lead to an

actual merger of all seven companies into a single organization.

The officers of the new corporation besides Mr. Dowd include: Herman Fink, president, Cooperative Tool & Machine Co., New Britain, vice-president; Charles Neumann, president, Argus Engineering Co., Hartford, treasurer; John I. Carlson, treasurer, Cooperative Tool & Machine Co., New Britain, secretary.

The directors include the officers and the following: O. J. Grandahl, senior partner, Grandahl Tool & Machine Co., Hartford; John D. Dewhurst, president, Arrow Tool Co., Hartford; Peter W. Zurles, president, Lake Tool & Machine Co., New Britain, and Frederick W. Wennerberg, president, Swan Tool & Machine Co., Hartford.

and their delivery dates can be easily met.

The actual galvanized tonnage involved can't be estimated and CCC reported they haven't tabulated that tonnage. Estimating tonnage is impossible as many sized bins and types of structures are involved. Not all manufacturers are sure they will meet their schedules, however. One company holding orders for over 3000 galvanized bins reported on Sept. 7 that no steel was on hand, but the mills had promised delivery by Sept. 15.

Material on Hand

Gages 18, 20, 22 and 24 in galvanized sheets are needed for the grain bin program. One gage, 22, is in short supply with some builders. One type of aluminum bin requires a bottom tier of 18 gage galvanized sheets. However, the aluminum bin builders report their galvanized requirements are on hand.

The program will largely be met, it appears, if this survey of over half the total number of bins to be made is indicative. Out of 19,540 bins, the orders for which are held by manufacturers contacted by THE IRON AGE, they report they are sure they can deliver 15,640.

Other Users Hard Hit

Steel producers have given the whole program priority so that the other users of galvanized sheets have been hard hit. One large Chicago mill reported that, as a result of their going all out to meet the grain bin requirement, other users have suffered a 3 to 4-week postponement. These galvanized users were worried last week over the possibility of a steel strike which could greatly extend their deliveries.

All of the grain bins being purchased by CCC will be used to store the 1948 corn crop, the loans on which the farmers did not redeem by Sept. 1. The Dept. of Agriculture reported on Aug. 26 that the total number of grain bin awards amounted to 50,405 of all types. Of these, 6010 were aluminum and 32,410 are to be made from steel. The balance are wood

Grain Bin Program Seen Well In Hand

Despite 30-day delivery clause, shortage of galvanized sheets 80 pct of bins expected on time . . . Aluminum bin builders have materials on hand—By D. I. BROWN

Chicago—It appears that steel producers and fabricators have done the impossible again. When the Commodity Credit Corp. started ordering grain bins, the steel supply was fairly easy except in galvanized sheets. The grain bin program quickly took all the galvanized tonnage the industry could produce for the rest of the year. Despite the unrealistic approach of CCC in demanding 30-day delivery after award of contract and considerable delay in placing orders, an IRON AGE survey of 15 of the principal builders shows that roughly 80 pct of the galvanized grain bins will be delivered on time.

Tonnage Can't Be Estimated

A total of 32,410 galvanized grain bins have been ordered. THE IRON AGE contacted manufacturers who have on order a total of 19,540 bins, plus all the companies making bins out of alumi-

num. Fabricators holding 7970 aluminum bin orders told THE IRON AGE all material is on hand



-ALI-

"Guess I'd better be getting back, Joe. The boss seems to think I'm taking too long."

or cement structures. The steel bins, according to CCC, will store 174,138,200 bu of corn.

When all bins are delivered, plus those now on hand, the total CCC storage will amount to more than 300,000,000 bu. "No purchases of bins beyond those now being processed are contemplated," CCC reported.

Must Give Notice

Inasmuch as CCC has a 60-day deadline from Sept. 1, all farmers must be notified as to where to make delivery of their corn by Nov. 1. The original CCC schedules were set so that all bins would be delivered to them by Oct. 15. On the basis of this survey it appears at the moment that there will be cases in which the government will not be able to give the farmers notice of shipment of corn deliveries, since about 20 pct of the total number of bins ordered will not be completed in time.

This does not mean 20 pct of the total of the crop by bushels will have no place to go, as this figure will vary, depending on which types of bins are not completed on the specified date.

ECA Funds for French Mill

Washington—With the help of Economic Cooperation Administration funds, a new electric-powered blooming mill will be installed at Rombas, France. A major part of the mill's 700,000 metric ton capacity will be devoted to blooms and slabs.

Costing about \$8 million, a third of which will be provided by ECA, the new equipment will replace two obsolete mills which were built prior to 1900.

Joins Armour Research

Chicago—Alfred G. Susie has been appointed supervisor of plastics research at Armour Research Foundation of Illinois Institute of Technology. For the past four and a half years he has been chief chemist at Marbon Corp., Gary.

Austria to Get Steel And Aluminum Mills from the U. S.

Pittsburgh—Austria's steel and aluminum industries are getting a million-dollar shot in the arm from the U. S.

The Lewis Foundry & Machine Div. of Blaw-Knox Co., has shipped four modern rolling mills, to be installed at Vienna, on an order placed by an Austrian firm through the Economic Cooperation Administration.

Included are two skin pass mills for rolling steel strip; one roughing mill for rolling sheet and strip aluminum, and one mill for rolling aluminum foil.

Largest unit in the group is the strip roughing mill, a four-high facility 15 x 36 x 60 in. Also four-high, the foil mill is 9 x 21 x 44 in. and will roll widths up to 36 in. with a finished gage of .00035 in. The skin pass mills are two-high, 22 x 50 in.

Pullman Car Order in Error

Chicago—Last week it was reported that Pullman-Standard Mfg. Co. had received an order from the Louisville & Nashville R.R. for 1000 70-ton covered hopper cars. This was in error and

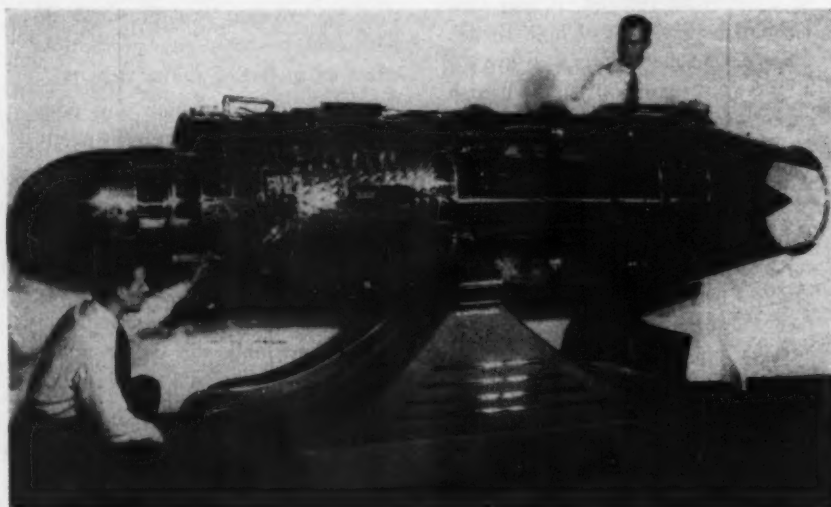
the quantity of cars should read 100. Pullman reports that their car backlog is very slim and the railroads have not yet shown any interest in placing new orders. It is believed by some of the car builders that after the railroads have operated a few months on the new 40-hr week they may be able to adjust their sights and again start placing limited car orders for needed equipment.

Planes Harass New Plant

Pittsburgh—It's tough enough to build an atomic power unit without having to glance worriedly skyward each time a plane buzzes overhead.

The trouble is that Westinghouse Electric Corp., is building the plant on the site of Pittsburgh's old Bettis Airport, and evidently some pilots are not yet aware that they cannot land there now. This despite frequent announcements by the Civil Aeronautics Administration and the usual "Danger closed" warnings set up to discourage unwelcome flying visitors.

Even Capt. Bill Odom, the round-the-world flier, dropped in unexpectedly last month, and was promptly shooed away.



FIRST PUBLIC SHOWING: By means of this cutaway jet engine, internal operation of the J-47 turbojet which powers the Air Force's jet planes was demonstrated publicly for the first time. The cutaway engine whose internal parts rotate as they do in actual operation was manufactured by General Electric Co. It was exhibited at Cleveland during the National Air Races.

Viewing the News from

The ECONOMIC SIDE

By JOSEPH STAGG LAWRENCE

"No Dictation Here"

ONE of the puzzling aspects of the British problem to the American layman is the reports of progress of the English economy at the very moment that another crisis of "unprecedented gravity" develops. The English government has balanced its budget—which is more than our own government can say. Her exports have increased 50 pct and the physical volume of her production 20 pct over prewar levels. How can such positive elements of economic good health be reconciled with the SOS which the Labor Government sends to Washington?

The balancing of the budget is a tribute to the honesty of the British cabinet. In spite of the great burdens of food subsidies, state medicine, and security from "the cradle to the grave", enough taxes are collected to meet the bills. Forty percent of the total income of the nation is funneled through the British Exchequer. It was once an axiom of public finance that the state could not safely tax its subjects more than 10 pct of their income without encountering violent resistance or running into the law of diminishing returns. It may well be that the real cost of high British taxes do not meet the naked eye.

The increase of 50 pct in British exports sounds more significant than in fact it is. British buying power overseas to a far greater extent than in any other modern commercial nation, has been dependent upon income from services and intangibles rather than the sale of goods. Before the first World War, English citizens held investments overseas amounting to \$20 billion, from which they collected dividends and interest of \$1.5 billion. In this same period their receipts from services, i.e., shipping, insurance and banking, showed an annual average of

\$600 million. With the proceeds of these services and their income from investments they were able to meet an unfavorable merchandise trade balance and still have \$750 million left for reinvestment overseas.

Today their income from investments has dropped to \$200 million and their intangible service account actually shows a deficit. To meet a merchandise and service deficit of \$1,900 million, they must reach into their capital which cannot tolerate such a drain indefinitely. A rise of 50 pct in their merchandise exports has fallen far short of matching the decline in investment and service income.

Furthermore, this impressive increase in exports contains a joker. When the war ended, sterling balances to the credit of allied countries, held in London, exceeded \$13 billion. India alone had \$4.5 billion. It is to the credit of the English that they are trying to honor these claims. The owners of the balances from time to time are permitted to draw against them to pay for goods bought in Britain. These are "unrequited" exports and represent a capital salvage operation for the creditors. They offer some explanation for growing exports which do not seem to have any perceptible effect on mounting dollar deficits.

The production, which now adds up to a 20 pct increase, comes partly in agriculture, all of whose output remains at home, and partly in goods which find a ready market at British prices only in the sterling area.

On the other hand, much of her food and raw materials comes from areas where only the dollar is acceptable currency. All this explains without providing a solution. There is nothing in these facts to justify the charge of British left-wingers that "potbellied" American capitalists are trying to dictate a solution.

Marshall Plan Purchases Include Railroad Equipment

Washington—The first Marshall Plan purchases of railroad locomotives and box cars for French West Africa, totaling \$4,447,000, have been announced recently by the Economic Cooperation Administration.

Under two procurement authorizations, the purchases are for 16 diesel-electric locomotives with a few spare parts, to be delivered in the first 6 months of 1950; and 330 box cars, to be delivered during the last 3 months of 1949.

The locomotives are being supplied by the Whitcomb Locomotive Co., Rochelle, Ill. The box cars are being supplied by the Magor Car Corp., New York City and Passaic, N. J.

The procurement authorization for the locomotives and parts is listed for \$2,350,000. However, there was a previously announced authorization for this transaction, amounting to \$755,000, making a total of \$3,105,000. The authorization for the box cars totals \$1,342,000.

U. S. Steel Enters Low-Cost Housing Race With Prefab Unit

New Albany, Ind.—U. S. Steel has decided to enter the untapped market of low-cost housing on a nation-wide basis. It plans to start immediate volume production and mass distribution of a four-room prefabricated dwelling to fit the purse of moderate income families.

The two-bedroom house, intended to be sold at about \$6000 including lot and landscaping, will be offered through the corporation's subsidiary here, Gunnison Homes, Inc. Main panels of the house are made of plywood of the stressed skin type which are made under heat at heavy pressure.

The plant here is geared for mass output of homes at a rate of one every 20 min.

The home is introduced to take advantage of the 95 pct FHA mortgage insurance, where the ap-

praised value of the home and lot isn't more than \$6300. Homes qualifying under this price can be bought for \$350 down and about \$37 a month including insurance and taxes.

Gunnison has been making homes for 15 years. But most of them have been in the higher priced brackets.

Navy Awards Engine Contract

Washington—The Navy recently announced awarding of an engine procurement contract to Pratt & Whitney Div., United Aircraft Corp., totaling \$29,192,000.

At the same time Naval contracts for pipe and tubes were awarded Bethlehem Steel Co., \$69,131.28; Tube Reducing Corp., \$50,894.76, and Globe Steel Tubes Co., \$51,800.20.

Other completed Navy contracts included Clark Equipment Company, \$416,588.26, forklift trucks and tractors; Silent Hoist & Crane Co., \$161,820, and Ross Carrier Co., \$74,880, straddle trucks.

Michigan Employment Holding

Lansing—Employment in manufacturing industries in Michigan was holding its own during July, according to reports compiled by the Michigan Labor and Industry Dept. Weighted average of reports from 1213 plants showed an increase of 0.6 pct over the June figure.

The Wayne County index climbed from 74.0 in June to 76.1 in July. Average hours worked increased from 38.6 to 39.4. Average weekly earnings was \$67.11.

Timken Lays Off 649 Workers

Canton, Ohio—Timken Roller Bearing Co., has laid off 649 workers in its bearing plants for an indefinite period, according to the company. The company said the reason for the layoff was a holding down of inventories of automobile companies because of fear of an automobile strike. The layoff will not affect Timken's steelmaking operations, which are now at about 80 pct of capacity.

Proposed Unemployed Hearings Called Off

Employment outlook appears brighter . . . Business has nothing to fear in the immediate future . . . Construction picture encouraging—By KARL RANNELLS

Washington—Proposed Congressional hearings on the subject of unemployment and suggested remedies have been called off indefinitely. They had been scheduled to open sometime next month.

Against the confidence of much of industry and some government officials that rising unemployment early in 1949 marked only a leveling-off period, some labor spokesmen and pessimistic economists had prodded the Joint Economic Committee into creating a subcommittee to investigate the situation.

But with unemployment again decreasing, capitol sources say those most active in urging hearings are now most reluctant to testify. It is now a dead group for the remainder of this Congressional session.

New High for Employment

Coinciding with this development, Commerce Secretary Sawyer has issued a report that current employment as of Sept. 1 stood at about 59.9 million—a new 1949 high but still below the 1948 all-time peak of 61.2 million.

"We are in a fundamentally sound condition," Mr. Sawyer said, standing by previous statements. He has just completed a survey of a large portion of the country observing economic conditions and is now on the West Coast completing his personal observation program.

At the same time, Dr. Edwin G. Nourse, chairman of the Council of Economic Advisers, said that, while he thought that disinflation had not yet run its course, he saw nothing to fear in the immediate future as regards the business outlook.

Drum-beating for unemployment remedies had been occasioned

earlier this year by a rise in estimates of jobless from 1.9 million a year ago to 4.1 million in mid-summer.

This figure dropped to 3.6 million in August with prospects of still further seasonal decreases as returning students are removed from the jobless rosters.

Influx of students released from school was one of the major reasons for the summer increases. Another was layoffs by many factories as a result of curtailed buying while inventories were being shaken out as a hedge against possible price drops.

Inventories Drop \$12 Billion

Mr. Sawyer points out that since the first of the year there has been a leveling-off or drop of \$12 billion in inventories. Now on a firmer basis, normal replenishment — perhaps rebuilding, in some cases—is called for.

Two additional bright spots are the construction picture and continued demand for automotive products.

Record Attendance at RR Fair

Chicago—Attendance at the Chicago Railroad Fair in its second year has been highly successful. Major Lohr explained the Railroad Fair's record by pointing out that it nearly doubled its exhibits and other features this year and that world wide attention was focused on the exposition.

Spot checks of attendance this summer have shown that approximately 59 pct of the visitors are from areas outside a 100 mile radius of the city. With 31 days yet to go, attendance has reached 1,875,610 which exceeds 75 pct of last year's total attendance. Last year 2½ million people viewed the exposition.

Introduces Equipment Pay Plan

Mishawaka, Ind. — A deferred payment plan designed to permit buying industrial equipment out of the savings effected from the use of equipment has been inaugurated by American Wheelabrator & Equipment Corp., Mishawaka, Ind. The plan calls for a 25 pct downpayment on equipment sold by the company, with 6 to 30 months to pay. Interest rates on

the unpaid balance of an account range from 4 pct on a 12 months account to 6 pct on a 30 months account, based on simple interest on unpaid balances.

Another feature of the plan is that prepayment can be made without penalty.

A recent publication of the company, listed as Bulletin No. 26, outlines the plan, giving examples of principal and interest payment on \$1000 unpaid balance.

Dresser Industries Net Off

Cleveland—Net profit of \$2,598,940 was earned by Dresser Industries, Inc., on sales of \$58,222,543 of present Dresser companies for the 9 months ended July 31, 1949. Consolidated sales for the first 9 months aggregated \$62,668,768 and earnings were \$3,240,459. During the same period last year, comparable sales were \$56,809,626 with earnings of \$4,290,216.

AMERICAN IRON AND STEEL INSTITUTE SHIPMENTS OF STEEL PRODUCTS ALL GRADES INCLUDING ALLOY AND STAINLESS (Net Tons)

JULY - 1949
Month

Steel Products	Number of companies	Items	Current Month			To Date This Year		
			Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	Per cent of Total Shipments	Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)	Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	Per cent of Total Shipments	Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)
Ingots, blooms, slabs, billets, tube rounds, sheet and tin bars, etc.	47	1	125,242	2.8	95,667	1,611,766	4.2	1,471,644
Skelp	6	2	8,210	0.2	38,322	63,364	0.2	278,755
Wire rods	21	3	34,784	0.8	13,808	340,984	0.9	144,558
Structural shapes (heavy)	11	4	290,005	6.4	731	2,480,861	6.5	17,852
Steel piling	3	5	20,738	0.4	-	202,074	0.5	1,357
Plates	28	6	463,535	10.2	9,166	4,083,370	10.7	140,899
Rails—Standard (over 60 lbs.)	4	7	175,720	3.9	3	1,265,968	3.3	6,302
Rails—All other	5	8	6,249	0.1	265	85,547	0.2	1,468
Joint bars	7	9	11,431	0.2	1,147	79,488	0.2	22,301
Tie plates	6	10	35,545	0.8	-	281,337	0.7	41
Track spikes	8	11	6,892	0.1	-	73,018	0.2	35
Wheels (rolled or forged)	5	12	22,611	0.5	-	202,048	0.5	598
Axles	5	13	12,006	0.3	-	126,070	0.3	29
Hot rolled bars (including light shapes)	39	14	431,607	9.5	40,877	4,387,695	11.5	457,080
Hot rolled bars—Reinforcing	24	15	125,180	2.8	-	959,281	2.5	2,264
Cold finished bars	33	16	70,136	1.5	245	849,105	2.2	4,527
Tool steel bars	17	17	2,945	0.1	14	36,596	0.1	463
Pipe—Standard	17	18	159,982	3.5	3,196	1,347,655	3.5	31,878
Pipe—Line	12	19	205,816	4.5	753	1,396,822	3.7	11,365
Pipe—Oil country goods	14	20	129,508	2.8	7,119	933,899	2.5	55,442
Tubes—Boiler	3	21	10,320	0.2	800	75,971	0.2	6,300
Tubes—Mechanical and pressure	21	22	31,475	0.7	636	434,366	1.1	11,330
Miscellaneous pipe (including conduit)	12	23	13,023	0.3	-	153,175	0.4	978
Wire—Drawn	38	24	123,219	2.7	7,878	1,311,661	3.4	81,777
Wire—Nails and staples	17	25	45,738	1.0	139	491,332	1.3	5,456
Wire—Barbed and twisted	15	26	12,646	0.3	-	150,762	0.4	32
Wire—Woven wire fence	13	27	20,781	0.5	22	252,704	0.7	1,502
Wire—Bale ties	12	28	3,527	0.1	-	30,735	0.1	-
Black plate	10	29	26,816	0.6	-	325,108	0.9	29
Tin and terne plate—Hot dipped	10	30	204,851	4.5	-	1,105,200	2.9	10
Tin plate—Electrolytic	10	31	213,455	4.7	-	1,218,627	3.2	42
Sheets—Hot rolled	28	32	479,061	10.6	30,531	4,107,664	10.8	403,219
Sheets—Cold rolled	16	33	625,775	13.8	367	4,222,523	11.1	12,092
Sheets—Galvanized	15	34	143,541	3.2	2	1,021,026	2.7	420
Sheets—Long terne	9	35	11,968	0.3	-	92,557	0.3	505
Sheets—Enameling	7	36	9,014	0.2	-	114,307	0.3	1,631
Sheets—Electrical	11	37	20,304	0.4	-	241,518	0.6	-
Strip—Hot rolled	23	38	125,133	2.8	13,357	1,041,451	2.7	171,510
Strip—Cold rolled	35	39	75,627	1.7	1,048	958,686	2.5	15,224
All other	4	40	459	-	-	7,691	-	-
Total steel products	138	41	4,534,855	100.0	266,093	38,164,012	100.0	3,361,152

During 1948 the companies included above represented 99.5 % of the total output of finished rolled steel products as reported to the American Iron and Steel Institute.

*Revised.

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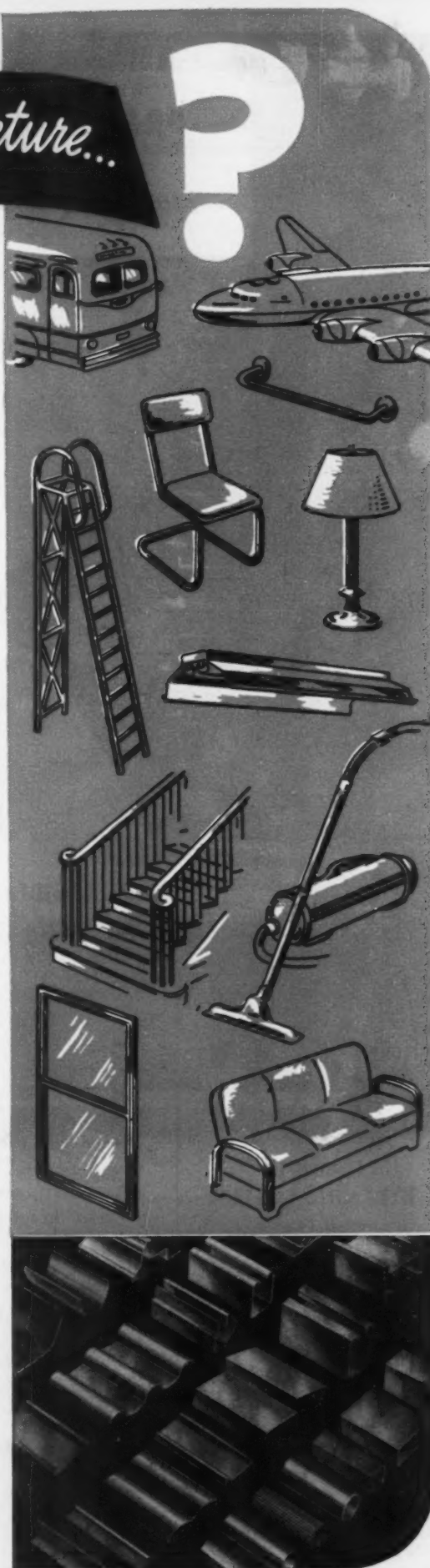
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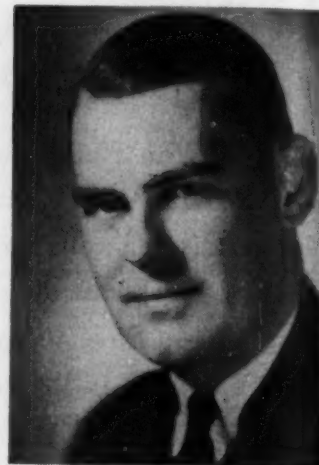
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Continued from Page 23

for 20 years in sales engineering work in the New York territory and in the Rochester and Milwaukee districts.



JOHN F. MILLER, manager, Tool Div., Illinois Tool Works.

John F. Miller has been appointed manager of the Tool Division of ILLINOIS TOOL WORKS, Chicago. Mr. Miller came to the company from the Ex-Cell-O Corp., Detroit, where he held the position of sales manager of the machine tool and cutting tool division.

James R. Hewitt, Jr., has been appointed district representative in the states of Texas and Louisiana for Coleman Core and Mold Ovens, manufactured by THE FOUNDRY EQUIPMENT CO., Cleveland.

T. Max Stanger will head the Salt Lake City sales office of AMERICAN WHEELABRATOR & EQUIPMENT CORP., Mishawaka, Ind. Before coming to the corporation, Mr. Stanger was associated with American Foundry and Machine Co., Salt Lake City.

John Gammell, sales representative in ALLIS-CHALMERS' Philadelphia district office, has been transferred to Milwaukee as supervisor of sales

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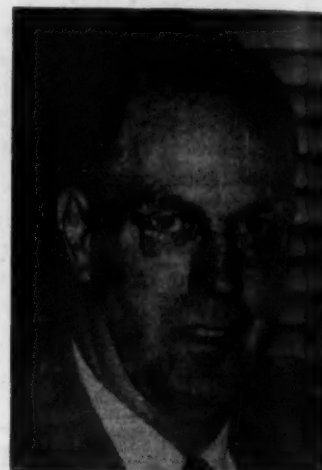
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IRON AGE INTRODUCES

Continued

training. Mr. Gammell entered the Philadelphia office as electrical engineer in 1934.

W. P. Benter, Jr., has been employed by the metallurgical department of TIMKEN ROLLER BEARING CO., Canton, Ohio.



HENRY WEBER, general superintendent and production manager, The Cleveland Chain & Mfg. Co.'s Fire Weld Div.

Henry Weber, affiliated with CLEVELAND CHAIN & MFG. CO., Cleveland, for over 40 years, has been named general superintendent and production manager of the company's Fire Weld Division. Mr. Weber was formerly assistant to the late Eli A. Round, nationally famous fire weld chain authority.

Willis J. Keenan will be manager of a new district sales office in Philadelphia opened by Woodhouse Chain Works of Trenton, N. J., an associate concern of The Cleveland Chain & Mfg. Co.

A. M. Fisher has become industrial manager of the northwestern district of WESTINGHOUSE ELECTRIC CORP., Pittsburgh. He joined the corporation in 1929 and served in the Chicago and Milwaukee sales offices. J. A. Holden will be manager of the Milwaukee office, to succeed Mr.

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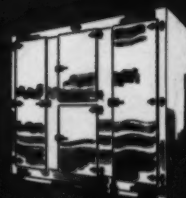
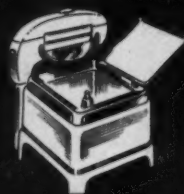
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OTHER PRODUCTS

IRON AGE INTRODUCES

Continued

Fisher. Mr. Holden has been with Westinghouse since 1924, in the Cincinnati and Chicago offices.

John H. Biggs has succeeded Thomas F. MacLaren as BROWN & SHARPE MFG. CO. representative in their Philadelphia office. Mr. Biggs was formerly the Rochester representative. Mr. MacLaren, who has been in Philadelphia for many years, will assume other responsibilities with Brown & Sharpe.



JOHN H. FAUNCE, JR., manager of sales promotion, Lukens Steel Co.

John H. Faunce, Jr., for the last three years district manager of sales at the Chicago office of LUKENS STEEL CO., Coatesville, Pa., has been named manager of sales promotion with headquarters in Coatesville. Before the war, Mr. Faunce was associated with Armco Steel Corp., Middletown, Ohio, for five years, serving respectively as manager of industrial markets and as manager of development engineering departments.

Homer H. Davis will serve as manager of the new Denver, Colo. office and warehouse of JOHN A. ROEBLING'S SONS CO., Trenton, N. J. Mr. Davis has represented the company in the Denver area for 23 years. Roy H. Hainsworth will be his assistant. Fred L. MacLean will take charge of oil field sales.

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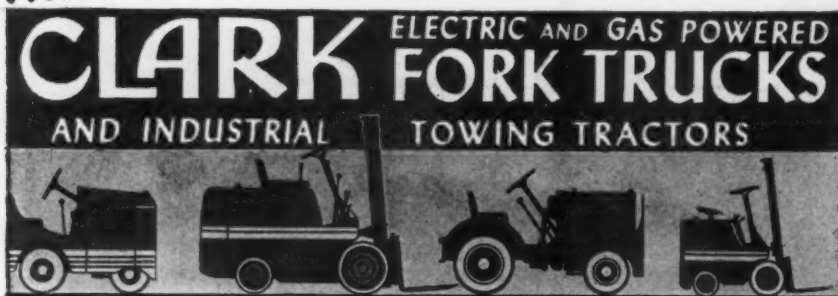
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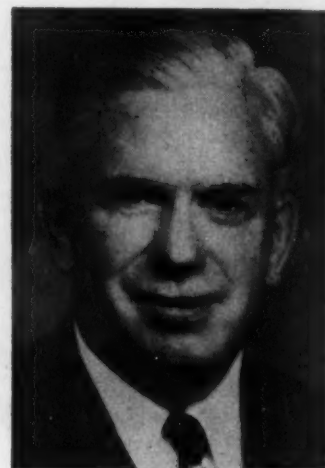
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IRON AGE INTRODUCES

Continued

Emerson D. Ogle has been ap-
pointed manager of the industrial
sales department of SKF INDUS-
TRIES, INC., New York. He succeeds
C. D. Cummings who has retired. Mr.
Ogle joined SKF in 1937 as an engi-
neer trainee.

William W. Follin has joined RADIO
FREQUENCY LABORATORIES,
INC., Boonton, N. J., as field engineer
for the Washington, D. C., area. Frank
X. Banko has joined the corporation
as assistant sales manager.



S. B. WITHINGTON, vice-president
Avco Manufacturing Corp. and
general manager Avco's Lycoming-
Spencer Div.

S. B. Withington, newly-elected vice-
president of AVCO MANUFACTUR-
ING CORP., New York, will assume
added duties as general manager of
the newly formed Lycoming-Spencer
Division at Williamsport, Pa. Mr.
Withington was previously general
manager of Avco's Republic Aircraft
Products Division at Detroit. Before
that, he acted as vice-president and a
director of Ordnance Steel Foundry
Co., Bettendorf, Iowa, and as general
manufacturing manager of Campbell,
Wyant and Cannon Foundry Co., Mus-
kegon, Mich.

Dr. Lewis H. D. Fraser has joined
the Armour Research Foundation of
ILLINOIS INSTITUTE OF TECH-
NOLOGY, Chicago, as supervisor of
inorganic technology in the ceramics
and minerals department. Alfred W.
Nutt has been made an associate

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AGE

PLENTY TOUGH

When the going's ROUGH!



LAMSON "1035" CAP SCREWS

Toughness... Strength... Precision

Accurately headed, precision threaded and *plenty rugged*—that, in a nutshell, describes Lamson "1035" Cap Screws. Lamson pioneered the "high tensile" Cap Screw after years of research and "on the job" testing.

Today's "1035" product is precision-made on the finest type of bolt-making machinery—and heat-treated automatically in furnaces where the atmosphere is scientifically controlled.

As a result, the modern Lamson "1035" Cap Screw is unmatched for strength, toughness and all-round quality.

That's why you'll be way ahead always to say "Lamson" *before* you say "Cap Screws."

THE LAMSON & SESSIONS COMPANY

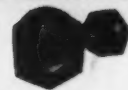
General Offices: 1971 West 85th Street, Cleveland 2, Ohio
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

Lamson & Sessions

"One Dependable Source for All Fastener Needs"

- | | | | |
|----------------|---------------|----------------|-------------|
| SEMS | LOCK NUTS | NUTS | STUDS |
| STOVE BOLTS | LAG BOLTS | WASHERS | RIVETS |
| TAPPING SCREWS | ROPE CLIPS | SET SCREWS | PLOW BOLTS |
| 35" CAP SCREWS | MACHINE BOLTS | CARRIAGE BOLTS | COTTER PINS |

WANT MORE INFORMATION on any of these fasteners? CHECK—and CLIP this strip.



LAMSON LOCK NUTS: Economical, vibration-proof. Can be re-used repeatedly.



"1035" SET SCREWS: Cup point type, hardened, heat-treated.



COTTER PINS: Steel, Brass, Aluminum and Stainless Steel.



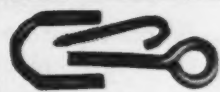
SPECIAL NUTS: Cone, Barrel, Oblong, Plier, Tri-Slot, Half-round, etc.



PHILLIPS AND CLUTCH HEAD: Machine Screws and Tapping Screws.



MILLED STUDS: Concentric, accurate, in a full range of sizes.



"BENT" BOLTS: Including U Bolts, Eye Bolts, Hook Bolts, etc.



WEATHER-TIGHT BOLTS: Eliminate counter-boring in wood assemblies.



PIPE PLUGS: Forged Steel, heat-treated.

The Lamson & Sessions Company
1971 W. 85th St., Cleveland 2, Ohio

NAME _____

POSITION _____

COMPANY _____

STREET _____

QUESTION: Where's the door in this picture?



ANSWER:

It's in the doorway alright, but you can't see it—because it's coiled compactly above the lintel! That's where KINNEAR STEEL ROLLING DOORS always are when open—completely out of the way. And they can't obstruct floor or wall space around opening, either. Even the overhead area is clear for conveyor or monorail as well as sprinkler piping, etc. These strong, Kinnear-originated curtains of interlocking steel slats give extra protection against fire and intrusion, plus "bonus years" of carefree door service. Built to fit any openings in old or new structures. Motor or manual control.

Available with

"PUSH BUTTON" MOTOR OPERATION

For added convenience and plant economy, KINNEAR STEEL ROLLING DOORS are available with the rugged Kinnear Motor Operator at right which is actuated from the push button

panel at left. The control button can be placed anywhere within or outside the building, or several control switches can be strategically located for handiest remote control operation.

Write for your Kinnear 40-page catalog today!

Saving Ways in Doorways

KINNEAR
ROLLING DOORS

THE KINNEAR MANUFACTURING CO.

Factories 1760-80 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, California
Offices and Agents in All Principal Cities

IRON AGE INTRODUCES

Continued

ceramic engineer. Daniel L. Deadmore and Donald M. Schell have entered the association as assistant ceramic engineers.

W. E. Kerr has been elected president of PENNSYLVANIA TRANSFORMER CO., Pittsburgh. Samuel Horelick, who for the past 20 years has been president of the company, has been elected to the newly created position of chairman of the board. Mr.



W. E. KERR, president, Pennsylvania Transformer Co.

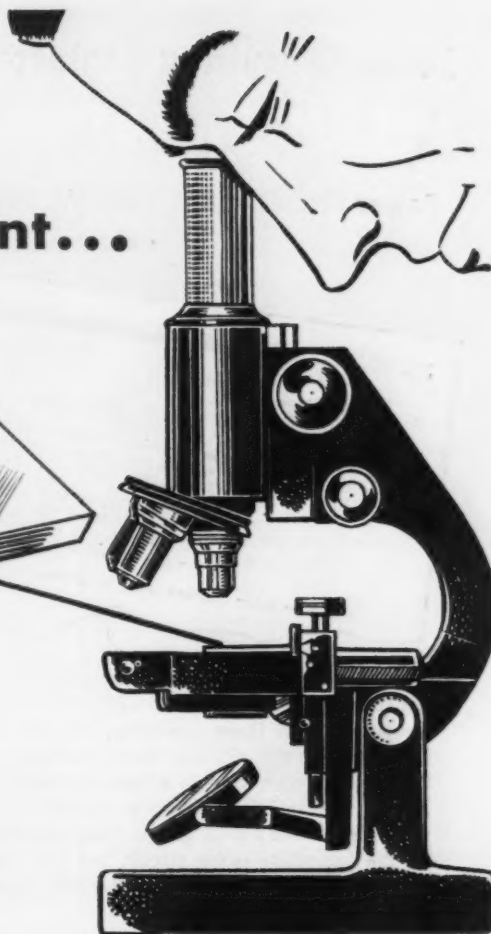
Kerr has been vice-president and treasurer of the company since it was organized by him and Mr. Horelick in 1929. W. R. Swoish is elected vice-president and will continue in his position as sales manager. Samuel Dickson becomes treasurer, and F. W. Dierker assistant treasurer. Miss A. M. Slater is secretary.

Charles D. McIntire has been named industrial sales manager of the Cincinnati branch office of Brown Instruments division, MINNEAPOLIS-HONEYWELL REGULATOR CO., Minneapolis. Mr. McIntire succeeds George Brown, who has been assigned to promotion of products of Honeywell's Belfield Valve division. John E. MacConville is now industrial sales manager of the Atlanta branch office, and will also supervise industrial sales activities out of the company's Birmingham, Jacksonville and Knoxville

Before you buy automatic plating equipment...



**look close
at these questions:**



There's a lot more to wise purchasing of plating equipment

for your plant than picking the lowest quotation

Ask if the plating room will be tied up a long time during installation, cutting your work volume down and costing you money. Udylite machines may be shipped ready to run, and can usually be installed over the week-end.

Ask if it is good business to purchase a knocked-down model which must be re-assembled in your plant. Udylite machines, shipped already assembled, can be moved through most doorways, using only a few machinery movers instead of requiring many movers and often millwrights to assemble the sections.

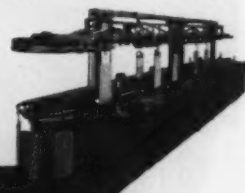
Ask if you are going to run into transportation problems by ordering the machine. Udylite builds machines less than 11 ft. wide which may be shipped anywhere. (Railroads can route a car almost anywhere if less than 11 ft. wide; highway trucks in many states are also limited to 11 ft. Wider machines cannot be shipped assembled.)

Ask how much working space is required. Load and unload space is often a problem around a machine. With the Udylite machines space requirements are held to a minimum and the racks are within easy reach.

Ask if the maintenance cost factor has been considered. Udylite machines have astonished users with their low maintenance cost. The mechanism is simple and easy to get at; any shop mechanic can understand it and keep it in fine running order.

Ask any Udylite Technical Man for the real comparative story and he will show you short and quick what is your best buy and the REASONS WHY. Udylite Technical Men have been serving the plating industry for many years with practical advice based on long experience. Call us before you make your decision.

*Shown here is the Udylite
Fully Automatic Plating Machine
which gives you the multiple benefits
described on this page.*



**PIONEER
OF A
BETTER WAY
IN PLATING**

DETROIT 11, MICHIGAN

Large Consulting Engineering Firm Selects EC&M VALIMITOR Starters for Power Circuit of 300,000 KVA Short-Circuit Capability

THE BUYER BY ACCEPTING THIS ORDER, AGREES TO THE SEVERAL CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF, AND MUST SIGN AND RETURN AT ONCE TO THE ACCEPTANCE COPY OF THIS ORDER.

Furnish the following:		Description	Net Unit Price	Net Item Price
Item	Quantity			
1	1	Metal enclosed assembly with five full voltage starters for control of the following five 2,300 v induction motors:		
		1 - 300 hp boiler feed pump motor		
		1 - 350 hp induced draft fan motor		
		1 - 100 hp forced draft fan motor		
		2 - 125 hp coal pulveriser motors		

The above motor starters shall be in accordance with attached specification.

"The power circuit which will supply this assembly has a short-circuit capability of 300,000 KVA at 2300 volt, and the units shall be suitable for operation under these conditions," say the specifications. EC&M VALIMITOR Starters not only meet these conditions, but will provide safe operation even if connected to a bus of *infinite* available KVA. There's no limit on VALIMITOR protection—no need to calculate present power—no need for revision if KVA grows. They reduce the effect of a "fault" not only on the immediate motor circuit, but limit the fault current clear back to the power source. EC&M VALIMITOR Starters are easy to apply—order them by motor name-plate data.



Unlimited SHORT CIRCUIT Protection at One Cost

SWITCH TO EC&M VALIMITOR Starters for all these features

- 1 **SHORT CIRCUIT** Protection regardless of available KVA.
- 2 **OVERLOAD** Protection.
- 3 **LOW VOLTAGE** Protection.
- 4 **CUSHIONED STARTING**—gives a smoother start and lower inrush current—improving starting conditions—may save cost of more expensive reduced voltage starter.
- 5 **NO REPLACEMENTS** to re-start, after a fault.

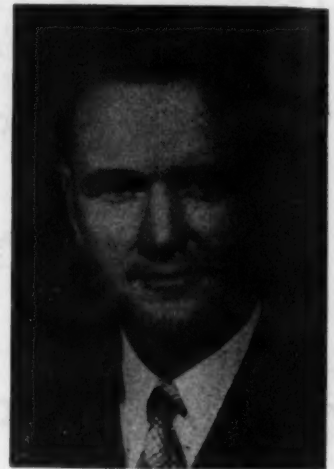
Write for No. 23 ACCELERATOR Issue describing these Starters

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

IRON AGE INTRODUCES

Continued

offices. William C. Waltman has been put in charge of industrial sales out of the South Bend office of the Brown Instruments division. He succeeds George Gilliam, who will supervise all pyrometer supplies sales for the company.



GERALD F. TWIST, manager, Peerless Pump Div., Food Machinery and Chemical Corp.

Gerald F. Twist has been appointed manager of the Peerless Pump Division of FOOD MACHINERY AND CHEMICAL CORP., San Jose, Calif. His headquarters will be at Los Angeles. Mr. Twist takes over the duties of Francis F. Fairman, Jr., who is resuming his former association with GENERAL ELECTRIC CO. Mr. Twist rose to the positions of director and executive vice-president of the Atlas Imperial Diesel Engine Co., Oakland, Calif. In 1947 he moved to FMC to take charge of their corn harvester manufacturing operation in Indiana.

Lowell H. Greene has been made general manager of VANCE IRON AND STEEL CO., Chattanooga. He succeeds J. B. Roberts. Mr. Greene joined the Vance organization this year. He began his career in the steel business with the Bourne-Fuller Co., Cleveland, now a part of Republic Steel Corp. Previously he had been a field representative for the tool steel department of Republic's bolt and nut division.

For Aluminum Bronze Weld Deposits of
***high strength, high ductility
and good corrosion resistance***

on bronzes, cast and malleable
iron and dissimilar metals



Specify AIRCO NO. 100 ELECTRODE

The Airco No. 100 is a shielded arc, general-purpose, aluminum bronze electrode for flat and horizontal welding with D-C, reversed polarity.

This popular electrode is used for producing sound, clean welds having high mechanical properties on bronzes, Muntz Metal and brass ... and also on malleable iron, clean cast iron and steel.

For welding harder grades of aluminum bronze — in the flat position with D-C, reversed polarity — Airco Nos. 116, 120, 125 and 130 Electrodes are used for their properties as non-ferrous, hard, overlay deposits — which are corrosion and acid resistant.

For more information on Airco No. 100, as well as Nos. 116, 120, 125 and 130 Electrodes, write your name and address on the margin

below and send it to your nearest Airco office or authorized dealer for a copy of Catalog No. ADC-650A.

★ ★ ★

Air Reduction supplies Oxygen, Acetylene and other industrial gases ... Carbide ... and a complete line of gas cutting machines, gas welding apparatus and supplies, plus arc welders, electrodes and accessories. Ask us about anything pertaining to gas welding and cutting, and arc welding ... we'll be glad to help you.



AIR REDUCTION

Offices in Principal Cities

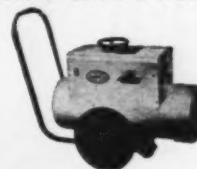
More news about
AIRCO products

STAINLESS STEEL ELECTRODES



Over 25 different types to fit most any problem involving the welding of stainless steels. For application with D-C, reversed polarity most electrodes are furnished with a heavy extruded lime type coating. For all position A-C or D-C application all but the straight chrome analysis are obtainable with an extruded titania type coating.

HORNET 36A D-C WELDER



A heavy-duty, high-speed, light-weight machine designed to furnish smooth, steady current for every D-C arc welding job — even under severe operating conditions. 200, 300 and 400 ampere sizes are available.

BUMBLEBEE A-C WELDER



This machine is known for its improved electrical efficiency at rated loads, wide current range, low open circuit voltage (75 volts), vastly improved power factor, quiet operation and minimum maintenance. There is a size available for every A-C welding purpose.

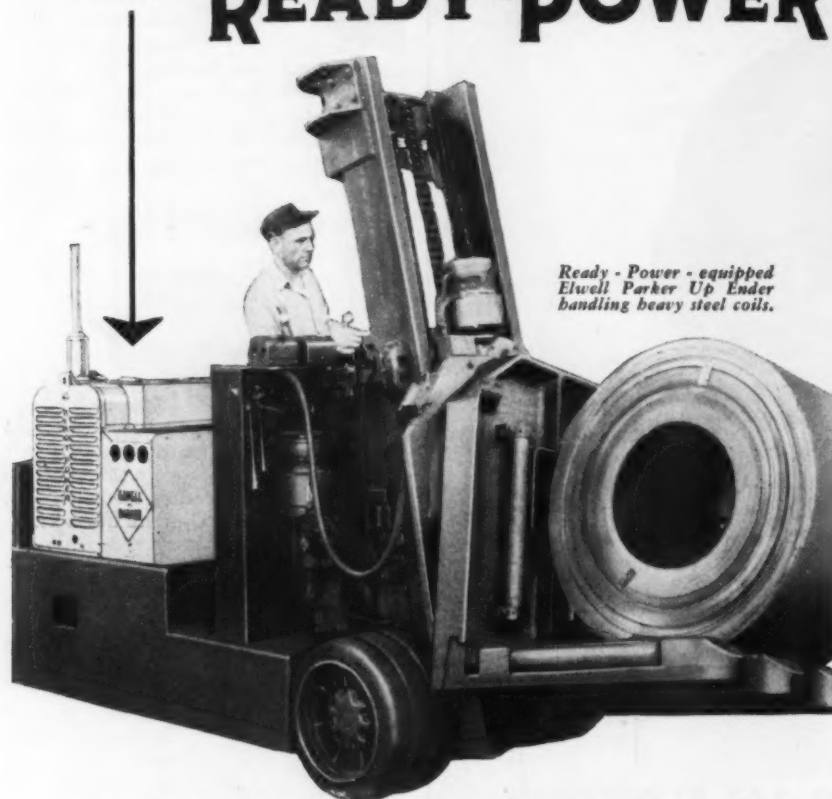
ELECTRODE HOLDERS



A complete line of Jackson tong type and Martin Wells screw type holders are available in various amperages and sizes.

more power

WITH **READY-POWER**



*Ready - Power - equipped
Elwell Parker Up Ender
handling heavy steel coils.*

FOR ELECTRIC TRUCK OPERATION AT ITS BEST!

Ready-Power-equipped electric trucks provide more power for heavy loads, more continuous hours of service and more materials handled in any given period. Dependable electric power is generated right on the truck chassis by an engine-driven, direct-current generator. Get the most out of your electric trucks. Convert them to Ready-Power. Specify Ready-Power on your new trucks. Write for descriptive literature.



*Ready - Power - equipped
Automatic Ram Trucks
handling steel coils.*

THE **READY-POWER** CO.

3822 Grand River Ave., Detroit 8, Michigan

IRON AGE INTRODUCES

Continued

Phillips B. Hoyt has become director of purchases of AMERICAN CAR AND FOUNDRY CO., New York. He succeeds A. A. Borgading, who has retired after 42 years of service. In his capacity as director of purchases,



PHILLIPS B. HOYT, director of purchases, American Car and Foundry Co.

Mr. Hoyt will have executive and administrative control of ACF's procurement of carbuilding and other materials.

OBITUARY

Samuel P. Bricker, 82, retired vice-president and general manager, NATIONAL METAL PRODUCTS CO., Pittsburgh, died Aug. 28.

J. P. Argyle, 87, retired vice-president, VIERLING STEEL WORKS, Chicago, died recently.

Frank L. Klingensmith, who, with Henry and Edsel Ford, once operated the Ford Motor Co., Detroit, died Aug. 29.

Harry J. Porter, 75, formerly vice-president in charge of sales of TIMKEN ROLLER BEARING CO., Canton, Ohio, died recently.

George F. Kroha, 50, vice-president and general sales manager of THE PFAUDLER CO., Rochester, N. Y., died Aug. 31.

David Black, office manager, THE HARRINGTON CO., Philadelphia, died recently.

Resume Your Reading on Page 24

FREE

PUBLICATIONS

Continued from Page 34

rings with seal and shield bearings. *Waldes Kohinoor, Inc.* For more information, check No. 12 on the postcard on p. 35.

Filters

Filters which feature backwashing system for ease of cleaning are illustrated and described in 12-p. booklet. Included are construction details, diagrammatic drawings showing operation and stone and wire mesh membrane information. *Titeflex, Inc.* For more information, check No. 13 on the postcard on p. 35.

Chains

Welded and weldless chains for industrial uses are listed in catalog. Included are hooks, bolts, hardware, accessories and hoists. *Hodell Chain Co.* For more information, check No. 14 on the postcard on p. 35.

Perforated Materials

Catalog No. 6 describes over 100 types of industrial and ornamental perforating. Also gives engineering data and information on how to specify perforating of various materials. *Accurate Perforating Co.* For more information, check No. 15 on the postcard on p. 35.

Power Shears

Power shears are among the items described in 40-p. catalog on Die-less Duplicating. Other equipment listed include cutoff tools,enders and formers, shears, punches, notchers and brakes. *O'Neil-Irwin Mfg. Co.* For more information, check No. 16 on the postcard on p. 35.

Electrical Connectors

Midget, automatic locking electrical plugs, receptacles, and cord connectors for commercial and industrial applications are described

in bulletin No. EL-49. *Russell & Stoll Co., Inc.* For more information, check No. 17 on the postcard on p. 35.

Switching Locomotives

Described in 16-p. bulletin is 80-ton diesel-electric locomotive for industrial switching. Features of unit are illustrated and operating economies are discussed. *Apparatus Dept., General Electric Corp.* For more information, check No. 18 on postcard on p. 35.

Conveyers

Bulletin No. 1400 describes advantages of using conveyers to move materials; also lists rollers, idlers, tripper, automatic backstop and belt cleaner. *Lippman Engineering Works.* For more information, check No. 19 on the postcard on p. 35.

Hydraulic Valves

High pressure hydraulic valves of the weighted accumulator throttle type are described in data sheet No. 4901. Included are dimensional drawings and parts list. *R. D. Wood Co.* For more information, check No. 20 on the postcard on p. 35.

Steel Partitions

Movable steel partitions, doors, frames, accessories and hardware for various commercial, industrial, hospital and home uses are described in an illustrated catalog, No. 49. Included are detailed drawings, plans and suggested layouts for numerous applications. *E. F. Hauserman Co.* For more information, check No. 21 on the postcard on p. 35.

Diesel Engines

Described in bulletin are dual-fuel diesel engines for heavy industrial applications. Features, advantages gained and examples of uses of such equipment, as well as schematic drawings, engineering data and specifications are given. *Worthington Pump & Machinery Corp.* For more information, check No. 22 on the postcard on p. 35.

Resume Your Reading on Page 35



"The big parts
are ready...
we cleaned 'em
with the

**OAKITE
Steam Gun!"**



HERE'S an easy, low-cost way to clean metal parts that are too large to be soaked in tanks or conveyed through washing machines!

Just use the Oakite Solution-Lifting Steam Gun to apply an Oakite cleaning solution under about 40 pounds of steam pressure. Oil, grease and other dirt leave metal surfaces in a hurry.

Also Strips Paint

Paint and other organic coatings disappear when the same Oakite Steam Gun is used to apply an Oakite stripping solution under low pressure.

After the Oakite Steam Gun treatment, large metal parts are ready for inspection, assembly, further machining, overhaul or repair. A subsequent Oakite conditioning process effectively prepares the metal for painting or similar finishing.

FREE

Write to Oakite Products, Inc., 30H Thames St., New York 6, N. Y., for illustrated folder F7338 containing more information about Oakite Solution-Lifting Steam Guns and the many cleaning operations on which they are used with substantial savings in time and money.

OAKITE



SPECIALIZED INDUSTRIAL CLEANING
MATERIALS • METHODS • SERVICE

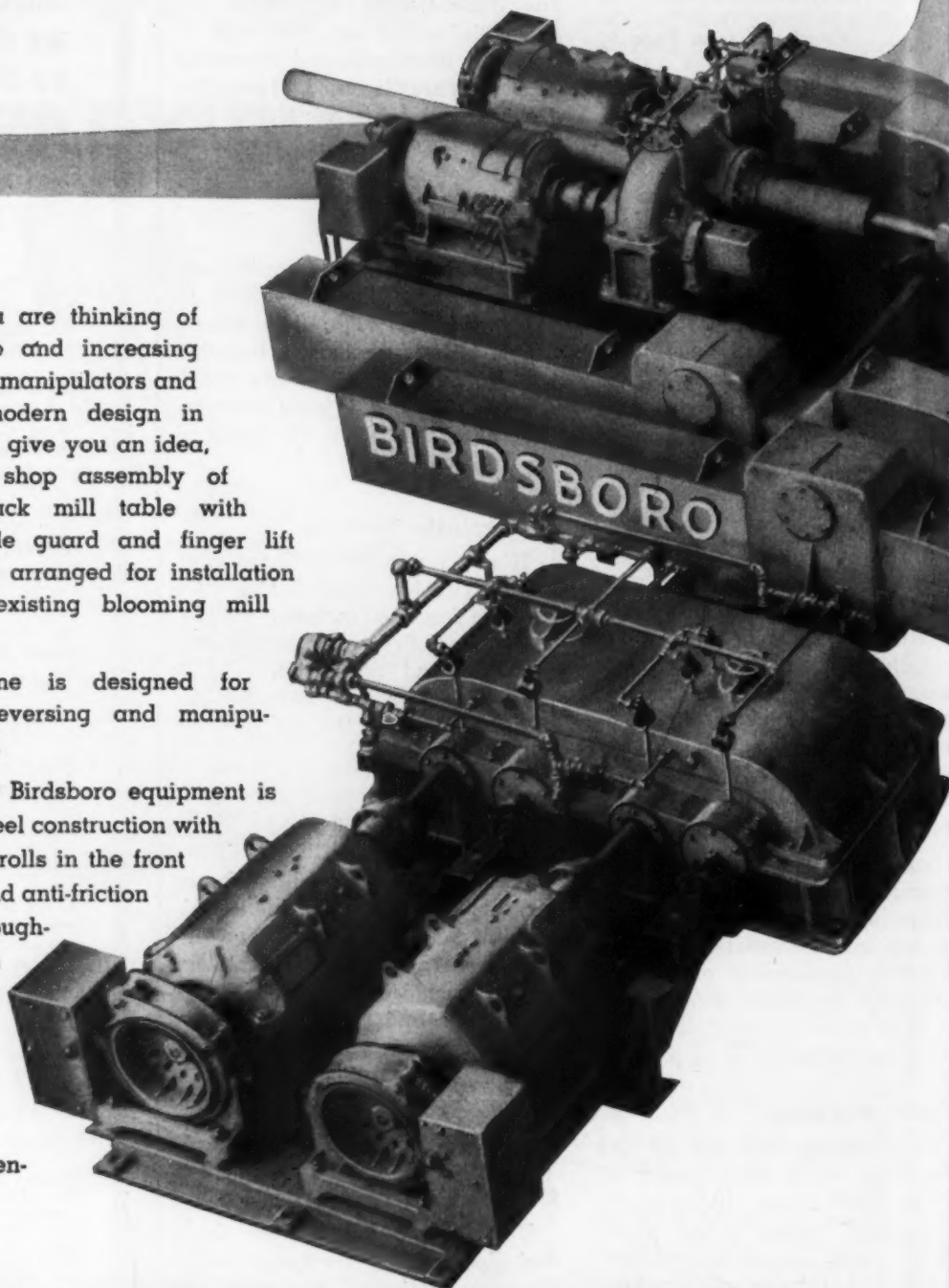
Technical Service Representatives Located in
Principal Cities of United States and Canada

speed up ROLLING MILL OPERATION

• When you are thinking of speeding up and increasing output, keep manipulators and tables of modern design in mind. Just to give you an idea, here is a shop assembly of front or back mill table with movable side guard and finger lift manipulator, arranged for installation with your existing blooming mill equipment.

This machine is designed for maximum reversing and manipulating speed.

Because this Birdsboro equipment is built of all-steel construction with forged steel rolls in the front of the mill and anti-friction bearings throughout, it stands up under the most severe service with minimum maintenance.



BIRDSBORO STEEL FOUNDRY and MACHINE COMPANY, BIRDSBORO, PA.
OFFICES IN: BIRDSBORO, PA. and PITTSBURGH, PA.

REPRESENTATIVES AT:

**9925 S. Hamilton Ave.
 Chicago 43, Illinois**

**507 Terminal Tower Bldg.,
 Cleveland 13, Ohio**

Briefs and Bulletins

postponed—A strongly worded telegram from President Truman to the Brotherhood of Railroad Trainmen's president Kennedy caused postponement of a strike slated for this week on the Union R.R., U. S. Steel connecting railroad in the Pittsburgh district. Blast furnaces were out on wind again Monday in the corporation's plants and steelmaking loss will not be large. More government pressure will probably be exerted soon to get the BRT to agree, as has the company, to arbitration.

union agrees—Phil Murray has telegraphed President Truman the union's acceptance of the fact finding board's recommendations—providing the steel companies also. There may be some negotiations this week and it could all be settled by next week. Possibility of a steel strike is now considered remote, since steel sources privately received the report of the board with restrained optimism.

coming back—The Massillon blast furnace of Republic Steel Corp. will be returned to production as soon as possible. Decision to resume production of the furnace was based on the sharp upward trend in scrap prices. Basic pig iron for openhearth steelmaking will be made at the furnace and shipped to Republic plants in Youngstown and Cleveland.

freight cars—Freight car deliveries during August totaled 7178, according to the American Railway Car Institute. July production was 6434. New orders during August amounted to 185, all being placed with the car builders. Backlog of orders as of Sept. 1 was 28,731. This compares with 36,564 on Aug. 1 and 117,815 a year ago.

chilean manganese—The U. S. has bid for Chile's entire production of manganese for the next 5 years. It now averages about 70,000 tons a year. Surveys are underway for the erection of five processing plants which would be capable of producing up to 250,000 tons annually.

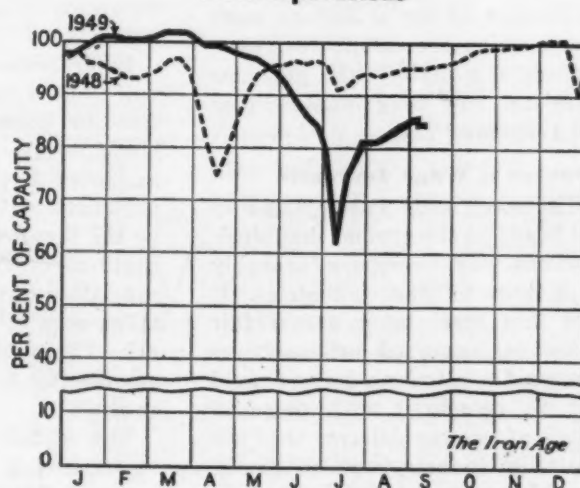
aluminum cut—The Aluminum Co. of Canada, Ltd., is reducing operations at Arvida and Shawinigan Falls smelters. The reduction is expected to be about 10 to 15 pct.

steel prices—A new feature has been added to THE IRON AGE steel price pages this week so that buyers can quickly identify steel producers. While retaining the tabular style for price quotations on most products, the names of steel companies have been added by means of a number key that permits the reader to tell who makes what in what district and where the company's home office is located.

reprieve—The market for galvanized sheets being what it is, the Apollo Steel Co. plant, Apollo, Pa. started up its galvanizing line this week, reemploying 125 men. Howard Keiser, president, expects production to reach between 5000 and 6000 tons a month. The plant was shut down several months ago when demand for sheets fell off and the company was unable to compete with its hand mill facilities.

drops base pricing—Standard Oil Co. of Indiana on Sept. 12 abandoned its method of multiple base point pricing. This system will be replaced by prices established for each bulk plant and other supply points on the basis of local economic and competitive factors.

Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
Sept. 4.....	81.0*	91.0	81.5	88.0	100.0	101.0	97.0*	101.0	88.0*	89.0	82.5	87.0	97.5	94.0*
Sept. 11.....	80.0	91.0	84.0	85.0	98.5	101.0	102.5	101.0	94.0	91.5	79.0	89.5	91.5	85.0

* Revised.

Steel Labor Board Report

Continued from Page 117

who appeared before it. If steel agrees to the report its labor costs will go up by 10¢ per hr at current operating rates — more at lower rates.

But U. S. Steel had already agreed to some increase for insurance and said it was ready to talk about a pension plan for next year. The difference between what U. S. Steel either offered this year or agreed to discuss for 1950 amounts to less than 5¢ an hr.

The findings and recommendations of the board were clear, concise and unanimous. Messrs. Carroll R. Daugherty, David L. Cole and Judge Samuel I. Rosenman listed the issues and then explained point by point how they reached their conclusions.

The issues were: (1) The union request for a 12½¢ per hr wage increase—which the companies refused; (2) a request for life, sickness, disability and hospitalization insurance to cost 6.27¢ per hr for a 2000-hr work year—which the companies either rejected or would not fully agree to; and (3) a request for pensions of \$125 a month or a maximum cost of 11.23¢ per hr for a 2000-hr work year—which the companies rejected on the claim that pensions were not now bargainable under the reopening clause.

Opposes a Wage Increase

The wage issue was rejected by the board on the ground that steelworkers' wages compare favorably with those in other industries. It felt that steel labor got a fair share in increased productivity; that profits in today's dollars could not be compared with those in terms of prewar dollars; that the "volatile" industry's ability to pay should be judged over a long range; and that the ownership share, as defined in terms of dividends is "very low."

Both company and union estimates of the break-even point were tossed out by the board. It felt that 65 or 70 pct was too high a figure, 32 pct too low. The answer

is somewhere in between, the board members believe.

Increased efficiency resulting from plant modernization, with no great drop in steel demand, should mean continued higher profits. If this does not bring lower steel prices, the board said, then the union could justifiably ask for higher wages.

A fourth round wage increase in steel would probably set a pattern for other industries and cause price dislocations that would adversely affect the general economy. With the downward trend either flattened out or reversed, the board urged that there be no wage changes to interfere with recovery. General stability would permit consumers to resume less restricted buying habits, it asserted.

Says Industry Can Absorb Cost

Taking up the economic justification for social insurance and pensions the panel held that the substantial profits of the steel industry in the past two years and the current reversal in the downward trend would permit the industry to absorb the cost of its insurance and pension recommendations without "unduly narrowing the profit margins of the industry or its ability to hold or even lower its prices."

Insurance and pension programs will make a considerable contribution to economic stability, the board wrote. Here it repeated an axiom of Dr. Daugherty's — an argument subsequently advanced by the Steelworkers—to the effect that temporary and permanent depreciation of the human should be taken care of as it is for machinery. "This obligation should be among the first charges on revenues."

The social insurance coverage recommended would cost a maximum of \$80.00 per year per employee, or 4¢ an hr on the basis of a 2000-hr work year. Neither this nor the pensions recommended should be superimposed on any existing programs; the board emphasized that its cost should be maxima. The union had held the opposite view.

The net cost for pensions, the report said, should be limited to \$120 per employee per year, or 6¢ per hr for a 2000-hr work year. The fact-finders said that, based on the union's estimates, this would provide the average employee with a total of about \$100 a month, including social security.

Since the pension problems are more involved than those of social insurance the board recommended a joint study and collective bargaining to thresh out the dozen or more questions involved by March 1, 1950.

Resume Your Reading on Page 118

Revise Exemption Provisions Under the Wage and Hour Laws

Washington—A 30-day notice of revisions in exemption provisions for white collar workers under the wage and hour laws has been issued by the Dept. of Labor. The changes do not materially reduce the 2.5 million workers affected but do clarify definitions.

Among basic requirements for exemption under the proposed revisions are:

Executive employees, must perform managerial duties, and a minimum of \$55 a week instead of \$30.

Administrative employees, must perform office or non-manual field work of importance to management, raised to \$75 a week from the present \$200 a month.

Professional employees, must perform work requiring advanced knowledge in specific fields, raised to a minimum of \$75 a week rather than the present \$200 a month.

A shortened test for these three classifications would exempt most of them if they received \$100 or more a week.

Lays Off Foundry Workers

Cleveland—Operations at Columbus Malleable Iron Co., subsidiary of Lake City Malleable Co., have been halted temporarily due to a lack of orders, according to J. H. Redhead, president of Lake City.

New Construction Work Holds Above Last Year's Rate

Washington—New construction put into place in August was valued at \$1.9 billion, the Commerce Dept. reports, bringing the total for the first 8 months to \$12.2 billion—a 2 pct increase over last year.

An increase of 30 pct in public construction is responsible for holding construction above last year's volume, privately financed building registering 6 pct less than last year.

Industrial and commercial construction is now going up at about three-fourths last year's rate. Public housing has doubled over the 1948 rate.

Simultaneously, the Public Housing Administration announces that it has allocated or "reserved" more than 100,000 of the 810,000 public housing units authorized under recently enacted legislation.

In addition to those previously reported in THE IRON AGE, the following reservations are being issued for the first 2 years of the program:

Philadelphia, 10,000 units; Pittsburgh, 5000; Boston, 4000; Newark, 3500; Milwaukee, 2500; Louisville, 2000; St. Paul, 2000; Hoboken, 700; Syracuse, 650; Wichita Falls (Tex.), 500; Bayonne, 500, and Passaic, 500.

Donora Damage Suits Growing

Pittsburgh—Damage suits against American Steel & Wire Co., growing out of deaths and illnesses during and following a heavy smog at Donora, Pa., last October may total more than \$2 million.

Attorney Charles J. Margiotti, who last week filed federal court suits for \$556,000 in behalf of relatives of 10 of 22 persons who died, said additional suits for \$1,487,950 will be filed soon for 121 persons who claim their health was impaired.

The suits averred that the U. S. Steel Corp. subsidiary was negli-

gent in failing to relieve production of "certain noxious fumes, poisonous gases, solids and chemicals" alleged to have been emitted by its Donora zinc plant. Treble damages were asked.

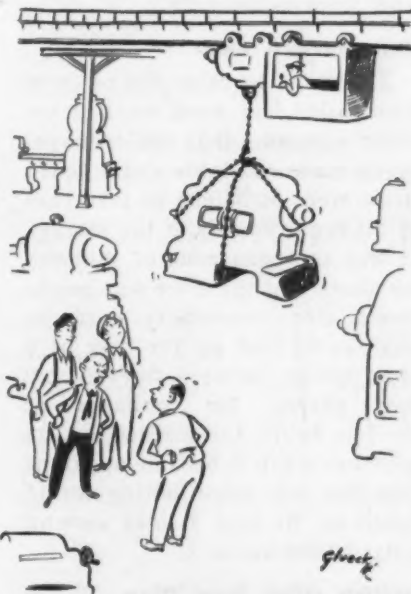
Mr. Margiotti cited previous damage suits against the company in 1918, 1931, 1934, and 1940 to bolster his claim that the company knew of the existence of the fumes.

The U. S. Public Health Service has not yet made public results of an investigation into cause of the disaster.

Kennecott Officials Killed

New York—Three high officials of Kennecott Copper Corp. met their death last week in the crash of a Quebec Airways plane bound Northeast from Montreal. They were E. T. Stannard, president; Arthur D. Storke, former president of Climax Molybdenum Corp., who was scheduled to succeed Mr. Stannard as president of Kennecott upon the retirement of Mr. Stannard at the end of the year; and Russell J. Parker, vice president.

A Kennecott spokesman in New York said that the executives had planned to inspect the titanium deposits at Havre St. Pierre, Que.



"All I got to say is this is one hell of a time to lose the installation drawing."

Construction Steel Awards

Fabricated steel awards this week included the following:

- 1200 Tons, Devon, Conn., power station unit No. 3, through United Engineers & Constructors, Inc., Philadelphia, to American Bridge Co., Pittsburgh.
- 700 Ton, Cleveland, Nottingham filtration plant, Hunkin Conkey, low bidder.
- 525 Tons, Steelton, Pa., Pennsylvania Turnpike Section 22 B, through G. A. & F. C. Wagman, Dallastown, Pa., subcontractors, to Bethlehem Steel Co., Bethlehem.
- 320 Ton, Perry, Juniata and Snyder Counties, Pa., Pennsylvania Dept. of Highways, through James Julian, Elsmere, Del., to American Bridge Co., Pittsburgh.

Fabricated steel inquiries this week included the following:

- 3705 Tons, Allegheny County, Pa., steel deck truss bridge, in City of Pittsburgh, Pennsylvania Dept. of Highways, due Sept. 30.
- 3700 Tons, Pittsburgh, Pennsylvania Dept. of Highways, LR 763(2A), due Sept. 30.
- 410 Tons, Allegheny County, Pa., divided highway, underpass, pedestrian overpass and bridge, in City of Pittsburgh, Pennsylvania Dept. of Highways, due Sept. 30.
- 400 Tons, Pittsburgh, Pennsylvania Dept. of Highways, LR 763(2B), due Sept. 30.
- 400 Tons, Allegheny County, Pa., Pennsylvania Dept. of Highways, LR 247(6), due Sept. 30.
- 400 Tons, Westmoreland County, Pa., Pennsylvania Dept. of Highways, LR 64125(1), due Sept. 30.
- 400 Tons, Westmoreland County, Pa., bridge over Sewickley Creek, Pennsylvania Dept. of Highways, due Sept. 30.
- 395 Tons, Allegheny County, Pa., divided highway, overhead bridge and connection ramps, in City of Pittsburgh, Pennsylvania Dept. of Highways, due Sept. 30.
- 200 Tons, Bradford County, Pa., repair bridge over north branch of Susquehanna River, Pennsylvania Dept. of Highways, due Sept. 30.
- 200 Tons, Bradford County, Pa., Pennsylvania Dept. of Highways, LR 08027, due Sept. 30.
- 195 Tons, Waterbury, Conn., 3 span composite deck bridge with concrete abutments and piers over Nagautuck River and South Leonard St.

Reinforcing bar awards this week included the following:

- 600 Tons, Berks County, Pa., Pennsylvania Dept. of Highways, Route 149, Section 6 B, C. W. Good, Inc., low bidder.
- 400 Tons, Philadelphia, elementary school at Levick & Horrocks Sts., Ralph Herzog, Philadelphia, low bidder.

Reinforcing bar inquiries this week included the following:

- 565 Tons, Allegheny County, Pa., steel deck truss bridge, in City of Pittsburgh, Pennsylvania Dept. of Highways, due Sept. 30.
- 465 Tons, Chicago, Relocation Housing Site No. 3, Welso Construction Co., Chicago.
- 450 Tons, Philadelphia, store at city line for Van Selver Corp., due Sept. 20.
- 400 Tons, Allegheny County, Pa., divided highway, underpass, pedestrian overpass and bridge, in City of Pittsburgh, Pennsylvania Dept. of Highways, due Sept. 30.
- 190 Tons, Chicago, Building for the American Institute of Baking, Bids Close Sept. 29.
- 125 Tons, Allegheny County, Pa., divided highway, overhead bridge and connection ramps in City of Pittsburgh, Pennsylvania Dept. of Highways, due Sept. 30.
- 125 Tons, Quincy, Mass., Nut Island Sewerage Treatment plant. Completion date Nov. 30, 1950.

Nonferrous METALS OUTLOOK

Market Activities

Industry optimistic over labor peace prospects . . . Copper sales improve . . . Price spread ends in zinc . . . British now offer consignment plan for tin buyers.



by

John Anthony

New York—There was some optimism in the metal industry over the prospects for concluding the steel wage negotiations on a realistic basis, which is expected to serve as the pattern for a peaceful solution to the pending wage disputes throughout the metal industries. There is no doubt that the prospect of a steel strike has been an important factor in reduced buying of zinc by galvanizers and die casters. It is believed by some that buying of other metals has also been held up for fear of inability to get such a basic material as steel.

Copper Sales Up

At the end of the first week in September, sales of copper for shipment during that month were somewhat better than 62,000 tons. Based on this figure, it is estimated by observers that total sales for September shipment should exceed 85,000 tons. Sales for August shipment reached 83,000 tons. The September tonnage might be even higher, except for the strike at Carteret, which limits the availability of certain shapes.

Total sales of lead for shipment in September are estimated at 65,000 to 70,000 tons, a reduction from August shipments estimated at more than 75,000 tons. The high

	Sept. 7	Sept. 8	Sept. 9	Sept. 10	Sept. 12	Sept. 13
Copper, electro, Conn. . . .	17.625	17.625	17.625	17.625	17.625	17.625
Copper, Lake, Conn.	17.75	17.75	17.75	17.75	17.75	17.75
Tin, Grade A, New York . . .	\$1.03	\$1.03	\$1.03	\$1.03	\$1.03	\$1.03
Zinc, East St. Louis	10.00	10.00	10.00	10.00	10.00	10.00
Lead, St. Louis	14.925-14.975	14.925-14.975	14.925-14.975	14.925-14.975	14.925-14.975	14.925-14.975

Note: Quotations are going prices.

rate of shipments in these two months will bring down producers' stocks in view of the current low level of domestic production. Industry stocks of lead at the end of July were 94,200 tons.

Zinc Spread Ends

The move to raise the price of zinc failed last week when it became apparent that the tonnages being made available at the lower price were sufficient to take care of all requirements of the market. It was the consensus of industry members that the move was poorly timed, since consumers were not anxious to load up for fear of a steel strike. After a flurry of orders placed for tonnages at the low figure, the market lost its pressure when it became apparent that the low price selling would continue. By Sept. 7 sales were on a flat 10.00¢ basis.

British Offer New Plan

Last week the British Ministry of Supply reopened its tin futures

market on the basis of payment in dollars. The move was made to prevent a drop in the tin market by means of discounted sterling futures. There was no buying on this basis, because consumers could get all the metal needed at the same price from the RFC. There was no advantage in buying for future delivery with the possibility of loss in the event of sterling devaluation.

When buyers did not appear on this basis, the British Ministry offered a consignment buying plan by which the contract price could be set by the buyer based on the Ministry price for any date from the time of purchase up to the tenth day after the date of arrival. This sales plan protects buyers against sterling devaluation. But tin buyers are expecting the market to drop in price, and this method of pricing would permit the Ministry to continue to stabilize the market at its present level for a long time.

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Nonferrous Prices

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	38.50
Beryllium copper, 3.75-4.25% Be	
dollars per lb contained Be	\$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	\$52.00
Bismuth, ton lots	\$2.00
Cadmium, del'd	\$2.00
Cobalt, 97-99% (per lb)	\$1.80 to \$1.87
Copper, electro, Conn. Valley	17.625
Copper, lake, Conn. Valley	17.75
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 99.8%, dollars per troy oz.	\$2.25
Iridium, dollars per troy oz.	\$100 to \$110
Lead, St. Louis	14.925-14.975
Lead, New York	15.125
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	30.50
Magnesium, sticks, carlots	34.50
Mercury, dollars per 76-lb flask	
f.o.b. New York	\$72 to \$75
Nickel, electro, f.o.b. New York	42.93
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$69 to \$72
Silver, New York, cents per oz.	73.25
Tin, Grade A, New York	\$1.03
Zinc, East St. Louis	10.00
Zinc, New York	10.72
Zirconium copper, 10-12 pct Zr, per lb contained Zr	\$12.00

Remelted Metals

Brass Ingot

(Published prices, cents per lb delivered, carloads)

95-5-5-5 ingot		
No. 115	15.00*	16.50
No. 120	14.50*	16.00
No. 123	14.00*	15.50
90-10-10 ingot		
No. 305		21.00
No. 315		18.00
85-10-2 ingot		
No. 210		27.50
No. 215		24.50
No. 245	17.50*	19.75
Yellow ingot		
No. 405	12.75*	14.25
Manganese bronze		
No. 421		19.00
* F.o.b. Philadelphia.		

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys		
0.30 copper, max.	18.75-19.00	
0.60 copper, max.	18.50-18.75	
Platino alloys (No. 122 type)	16.75	
No. 12 alum. (No. 2 grade)	15.50-16.00	
108 alloy	16.25-16.75	
125 alloy	17.25-17.50	
135 alloy	18.50-18.75	
AXS-679	16.50-16.75	
5% Ti, Aluminum, f.o.b., Eddystone, Pa.		
Low copper	31.00	
2% copper	28.00	
Steel deoxidizing aluminum, notch-bar granulated or shot		
Grade 1—95-97 1/2%	17.50-18.00	
Grade 2—92-95%	16.50-17.00	
Grade 3—90-92%	15.50-16.00	
Grade 4—85-90%	14.50-15.00	

Electroplating Supplies

Anodes
(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	34%
Electrodeposited	28%
Roller, oval, straight, delivered	31.46
Ball anodes	32%
Brass, 80-20	
Cast, oval, 15 in. or longer	30%
Zinc, oval, 99.88%, f.o.b. Detroit	17%
Ball anodes	16%
Nickel 99 pct plus	
Cast	59.00
Roller, depolarized	60.00
Cadmium	\$2.15
Silver 999 fine, roller, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79
Chemicals	
(Cents per lb, f.o.b. shipping point)	
Copper cyanide, 100 lb drum	45.00
Copper sulfate, 99.5 crystals, bbl.	11.10
Nickel salts, single or double, 4-100 lb bags, frt allowed	18.00
Nickel chloride, 300 lb bbl.	24.50
Silver cyanide, 100 oz lots, per oz.	59
Sodium cyanide, 95 pct domestic 200 lb drums	19.25
Zinc sulfate, crystals, 22.5 pct, bags	6.75
Zinc sulfate, 25 pct, flakes, bbl.	7.75

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 24.94; 4S, 25.84; 5S, 26.74; 6S, 27.64; 7S, 28.54; 8S, 29.44; 9S, 30.34; 10S, 31.24; 11S, 32.14; 12S, 33.04; 13S, 33.94; 14S, 34.84; 15S, 35.74; 16S, 36.64; 17S, 37.54; 18S, 38.44; 19S, 39.34; 20S, 40.24; 21S, 41.14; 22S, 42.04; 23S, 42.94; 24S, 43.84; 25S, 44.74; 26S, 45.64; 27S, 46.54; 28S, 47.44; 29S, 48.34; 30S, 49.24; 31S, 50.14; 32S, 51.04; 33S, 51.94; 34S, 52.84; 35S, 53.74; 36S, 54.64; 37S, 55.54; 38S, 56.44; 39S, 57.34; 40S, 58.24; 41S, 59.14; 42S, 60.04; 43S, 60.94; 44S, 61.84; 45S, 62.74; 46S, 63.64; 47S, 64.54; 48S, 65.44; 49S, 66.34; 50S, 67.24; 51S, 68.14; 52S, 69.04; 53S, 69.94; 54S, 70.84; 55S, 71.74; 56S, 72.64; 57S, 73.54; 58S, 74.44; 59S, 75.34; 60S, 76.24; 61S, 77.14; 62S, 78.04; 63S, 78.94; 64S, 79.84; 65S, 80.74; 66S, 81.64; 67S, 82.54; 68S, 83.44; 69S, 84.34; 70S, 85.24; 71S, 86.14; 72S, 87.04; 73S, 87.94; 74S, 88.84; 75S, 89.74; 76S, 90.64; 77S, 91.54; 78S, 92.44; 79S, 93.34; 80S, 94.24; 81S, 95.14; 82S, 96.04; 83S, 96.94; 84S, 97.84; 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662S, 618.04; 663S, 618.94; 664S, 619.84; 665S, 620.74; 666S, 621.64; 667S, 622.54; 668S, 623.44; 669S, 624.34; 670S, 625.24; 671S, 626.14;
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MARKETS—PRICES—TRENDS



SCRAP Iron & Steel

Prices Up; No Large-Scale Mill Buying

Price advances continued in all major market areas this week despite the lack of large-scale mill buying. So far the mills have shown no indication that they would enter the open market for their winter's supply of scrap. Railroad and plant lists have repeatedly been bought at prices that were several dollars higher than the going market quotation. In fact, No. 1 railroad heavy melting has sold up to \$34.00. The top quotation of No. 1 steel was up \$3.50 in Pittsburgh; in Cincinnati it was up \$2.00; and in Chicago, Philadelphia, Youngstown and Boston it was up \$1.00. THE IRON AGE scrap composite is up \$1.83 per gross ton to \$25.75.

PITTSBURGH—Broker buying to cover an old order raised the price of No. 1 heavy melting \$3.50 to a top of \$28.50 this week. There were reports that one mill was paying as high as \$30.00, delivered from out-of-district for this grade on an order announced originally at \$25.00. Other melting grades were up in sympathy, with the exception of No. 2 bundles, which were a drag on the market at \$21.00. Machine shop turnings were up \$1.00 to \$19.00, and shoveling turnings rose \$2.00 to \$22.00 on a sale. Low phos plate jumped \$3.00 to a top of \$30.00. On the basis of reported prices for railroad lists, No. 1 R.R. heavy melting was up \$6.00 to a top of \$32.00; specialties jumped to \$34.00. Cast grades also rose.

CHICAGO—The mills took it easy but the brokers were whooping up prices all along the line. Plants running auctions on their scrap got as high as \$27.00 for No. 1 heavy melting f.o.b. their track, and factory bundles in cases topped this. Railroad prices continued upward. The big question mark is, "How many brokers have a place to go with their scrap?" Many of the high prices are for materials generated 70 to 100 miles out of Chicago. Dealers are being asked by brokers to allow scrap to be laid down in the yard. Some such arrangements have been consummated but in most cases the dealers don't have too much room left.

PHILADELPHIA—Steel scrap was sold to several consumers at prices \$1.00 to \$1.50 higher than previous quotations. Cast grades were sold at prices from \$1.00 to \$5.00 higher than previous quotations. Low phos grades are quoted \$1.00 higher. Scrap volume in this market has been improving during the last few weeks. But dealers are holding out for higher prices. Mills would be willing to buy heavier tonnages than are moving. Foundries have been pushing to get broken cast, in preference to higher cost pig iron.

NEW YORK—The market continued strong in the absence of any large sales. Mills have not yet entered the market here for material. Foundries were still trying to buy all the material that was available. Higher prices have produced more material and some sources indicated that enough material was available to fill present orders. Low inventories on the part of foundries is expected to keep the demand for some of the cast grades up.

DETROIT—The local scrap market showed signs of hesitation this week, pending settlement of the steel controversy, but there are no indications of underlying weakness. The recent tone of

the market is strong, particularly for blast furnace grades and cast iron scrap. All signs point now to a continued advance in prices if steel operating rates continue to rise as is now confidentially expected by many local observers.

CLEVELAND—Broker offerings to mill buyers here and in the Valley were increasing this week, but so were the prices. All grades are in strong demand in the Valley, but like the dealers, mills are holding out to the bitter end. Railroad material brought prices which not only strengthened the market but added to the general confusion. One road's heavy melting brought \$9.50 more than the last time. On the other hand, a tonnage of railroad steel was offered a major consumer here at less than the recent price.

BOSTON—Recent price advances are being maintained in the market here, but almost everybody agrees that there is very little business. In fact, there is confusion as to prices in many scrap items. No. 1 steel is being quoted by some from anywhere to \$14.00 to \$18.00. In short, the situation is far from normal. There is only slight activity in cast.

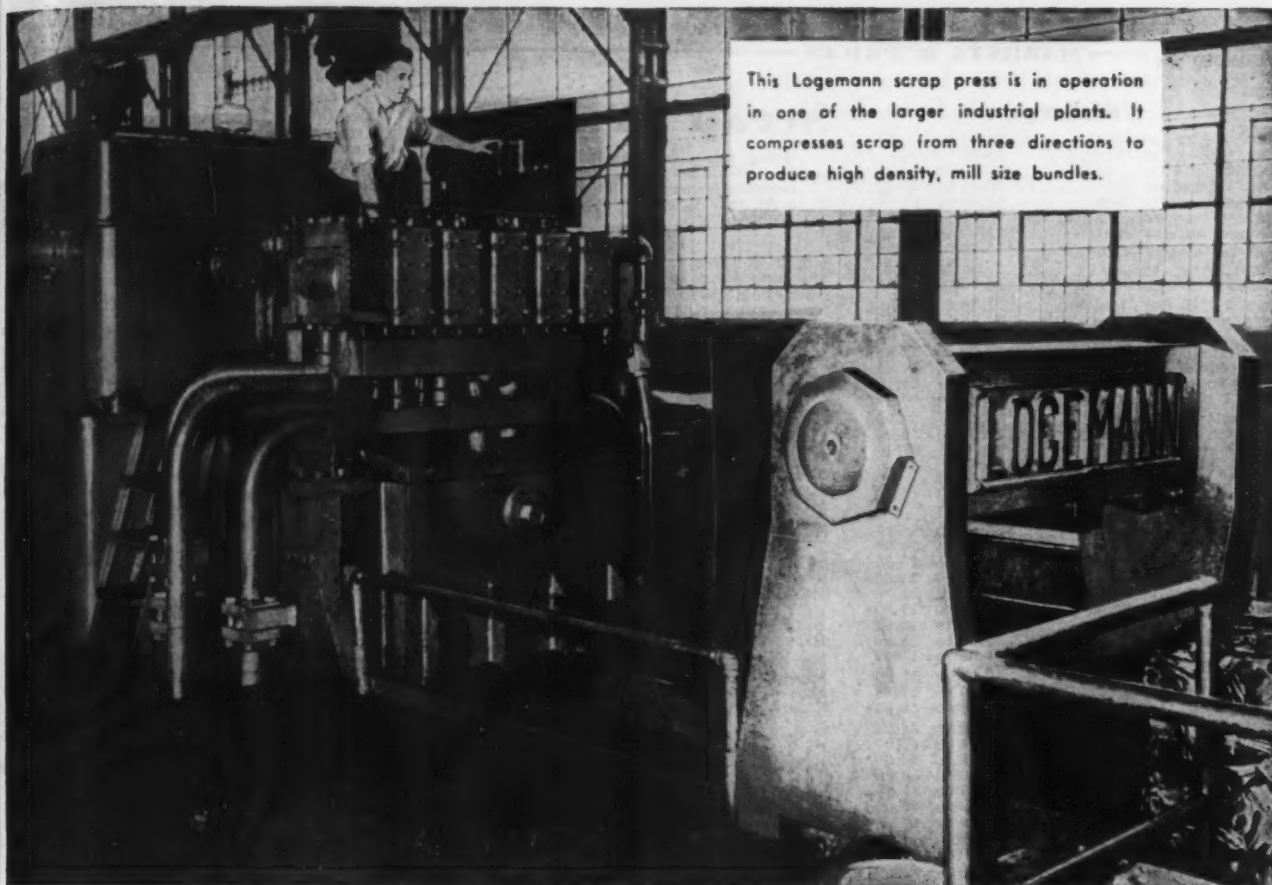
BUFFALO—The market went through another week of hopeful waiting for new business while major consumers continued to reach out for plant scrap in other districts. As a result, there were no changes in quotations. Bids obtained on major Eastern rail lists last week certainly did nothing to weaken sentiment, and dealer confidence in current prices was unshaken.

CINCINNATI—All grades are stronger in an active market here. Mills and foundries are buying with sales of railroad material adding a fill-in. Material continues to move from the Cincinnati area to other districts, but turnings are not moving locally. Brokers are getting plenty of resistance from dealers instead of tonnage. Real strength of the market is in No. 1 and the foundry grades. No. 2 steel and bundles are moving also, but the strength of turnings is primarily sympathetic.

BIRMINGHAM—A strong undertone for all grades continues in this market but prices for the most part remain unchanged. Dealers are reluctant to sell at the prices prevailing for openhearth grades of steel. At the beginning of the week \$22.00 was being offered for No. 1 heavy melting but dealers were asking as much as \$26.00 for that grade. Very little material was moving at the \$22.00 price.

ST. LOUIS—It is still a brokers' market in scrap iron here with prices generally unchanged. The aim of brokers to get material was shown in the strength of the offerings by railroads. The recent increases have not been reflected as yet in stimulating shipments from the country.

SAN FRANCISCO—Openhearth and electric furnace scrap have been appreciably more active, especially in southern California, without change in price but with substantially more movement. Demand for cast scrap in Los Angeles has raised the quotations, ranging between \$32.00 and \$38.00, depending upon quality and grade. Some quantities of cast foundry scrap have been shipped in from northern to southern California. Dealers are not pressing sales, expecting a rise.



This Logemann scrap press is in operation in one of the larger industrial plants. It compresses scrap from three directions to produce high density, mill size bundles.

Self-Contained } **LOGEMANN**
Triple Compression . . . } **SCRAP PRESSES**
Automatically Controlled }

handle high tonnages with minimum labor . . . at low cost

• **LOGEMANN
METAL
BALERS**

... are built in a large range of sizes to meet specific conditions. Let Logemann's engineering service help you arrive at the most efficient and economical way of handling your scrap.

The compact unit illustrated is completely self-contained with oil tank and pump located directly over the press . . . utilizing the advantages of short pipe lines. Automatic controls, mounted in front of pump, give the operator full visibility at all times. Controls operate rams successively within a single rigid box. There is no complex construction which means there is no need for specially-trained maintenance crews.

Both two-ram and three-ram models are available with automatic controls or for manual manipulation.

Logemann Bros. Co. have specialized in the production of scrap metal presses for sheet mills, stamping plants, scrap yards, and metal manufacturing plants of all types for nearly 75 years. Write for full information — please state the nature of your scrap and tonnage.

LOGEMANN BROTHERS COMPANY
3164 W. Burleigh Street • Milwaukee 10, Wisconsin

Pittsburgh

No. 1 hvy. melting	\$28.00 to \$28.50
No. 2 hvy. melting	26.00 to 26.50
No. 1 bundles	28.00 to 28.50
No. 2 bundles	20.50 to 21.00
Machine shop turn.	18.50 to 19.00
Mixed bor. and ms. turn.	18.50 to 19.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	20.00 to 21.00
Low phos. plate	29.50 to 30.00
Heavy turnings	24.00 to 25.00
No. 1 RR. hvy. melting	31.50 to 32.00
Scrap rails, random lgth.	34.00 to 35.00
Rails 2 ft and under	38.00 to 39.00
RR. steel wheels	33.00 to 34.00
RR. spring steel	33.00 to 34.00
RR. couplers and knuckles	33.00 to 34.00
No. 1 machinery cast.	39.00 to 40.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	29.00 to 30.00
Malleable	32.00 to 33.00

Chicago

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 factory bundles	23.00 to 24.00
No. 1 dealers' bundles	23.00 to 24.00
No. 2 dealers' bundles	20.00 to 21.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	16.00 to 17.00
Low phos. forge crops	30.00 to 31.00
Low phos. plate	28.00 to 29.00
No. 1 RR. hvy. melting	29.00 to 30.00
Scrap rails, random lgth.	35.50 to 36.50
Rerolling rails	41.00 to 42.00
Rails 2 ft and under	40.00 to 41.00
Locomotive tires, cut	37.00 to 38.00
Cut bolsters & side frames	35.00 to 36.00
Angles and splice bars	35.00 to 36.00
RR. steel car axles	43.00 to 44.00
No. 3 steel wheels	31.00 to 32.00
RR. couplers and knuckles	35.00 to 36.00
No. 1 machinery cast.	42.00 to 43.00
No. 1 agricul. cast.	41.00 to 42.00
Heavy breakable cast.	33.00 to 34.00
RR. grate bars	31.00 to 32.00
Cast iron brake shoes	31.00 to 32.00
Cast iron car wheels	35.00 to 36.00
Malleable	36.00 to 37.00

Philadelphia

No. 1 hvy. melting	\$23.00 to \$24.00
No. 2 hvy. melting	21.50 to 22.50
No. 1 bundles	23.00 to 24.00
No. 2 bundles	20.50 to 21.50
Machine shop turn.	15.50 to 16.50
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Low phos. punchings, plate	26.00 to 27.00
Low phos. 5 ft and under	25.00 to 26.00
Low phos. bundles	25.00 to 26.00
Hvy. axle forge turn.	23.00 to 24.00
Clean cast chem. borings	19.50 to 20.50
RR. steel wheels	26.00 to 28.00
RR. spring steel	26.00 to 28.00
No. 1 machinery cast.	36.00 to 38.00
Mixed yard cast.	34.00 to 35.00
Heavy breakable cast.	30.00 to 31.00
Cast iron carwheels	32.00 to 33.00
Malleable	29.00 to 30.00

Cleveland

No. 1 hvy. melting	\$24.50 to \$25.00
No. 2 hvy. melting	21.50 to 23.00
No. 1 bushelings	24.50 to 25.00
No. 1 bundles	24.50 to 25.00
No. 2 bundles	19.50 to 20.00
Machine shop turn.	16.50 to 17.00
Mixed bor. and turn.	19.50 to 20.00
Shoveling turnings	19.50 to 20.00
Cast iron borings	19.50 to 20.00
Low phos. 2 ft and under	27.00 to 27.50
Steel axle turn.	24.50 to 25.00
Drop forge flashings	24.50 to 25.00
No. 1 RR. hvy. melting	32.00 to 33.00
Rails 3 ft and under	38.00 to 39.00
Rails 18 in. and under	39.00 to 40.00
No. 1 machinery cast.	40.00 to 41.00
RR. cast.	41.00 to 42.00
RR. grate bars	31.00 to 32.00
Stove plate	34.00 to 35.00
Malleable	35.00 to 36.00

Youngstown

No. 1 hvy. melting	\$28.00 to \$28.50
No. 2 hvy. melting	24.00 to 24.50
No. 1 bundles	28.00 to 28.50

Scrap IRON & STEEL Prices

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

No. 2 bundles	\$22.00 to \$22.50
Machine shop turn.	19.00 to 19.50
Shoveling turnings	22.00 to 22.50
Cast iron borings	22.00 to 22.50
Low phos. plate	29.50 to 30.00

Buffalo

No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 busheling	23.00 to 24.00
No. 1 bundles	23.00 to 24.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos. plate	28.00 to 29.00
Scrap rails, random lgth.	27.00 to 28.00
Rails 18 in. and under	32.00 to 33.00
RR. steel wheels	28.00 to 29.00
RR. spring steel	28.00 to 29.00
RR. couplers and knuckles	28.00 to 29.00
No. 1 cupola cast	36.00 to 37.00
Mixed yard cast.	34.00 to 35.00
Stove plate	34.00 to 35.00
Small indus. malleable	22.50 to 23.50

Birmingham

No. 1 hvy. melting	\$22.00
No. 2 hvy. melting	22.00
No. 2 bundles	20.00
No. 1 busheling	22.00
Machine shop turn.	\$16.00 to 17.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Bar crops and plate	28.00
Structural and plate	28.00
No. 1 RR. hvy. melt.	23.00
Scrap rails, random lgth.	29.00 to 30.00
Rerolling rails	33.00 to 34.00
Rails 2 ft and under	34.00 to 35.00
Angles & splice bars	31.50 to 32.00
Std. steel axles	28.00 to 29.00
No. 1 cupola cast	33.50 to 34.00
Stove plate	28.00
Cast iron carwheels	23.00 to 24.00

St. Louis

No. 1 hvy. melting	\$24.00 to \$25.00
No. 2 hvy. melting	21.00 to 22.00
No. 2 bundled sheets	21.00 to 22.00
Machine shop turn.	14.00 to 16.00
Shoveling turnings	15.00 to 16.00
Rails, random lengths	29.00 to 30.00
Rails 3 ft and under	33.00 to 34.00
Locomotive tires, uncut	25.00 to 26.00
Angles and splice bars	33.00 to 34.00
Std. steel car axles	36.00 to 37.00
RR. spring steel	27.00 to 28.00
No. 1 machinery cast.	35.00 to 36.00
Hvy. breakable cast.	28.00 to 29.00
Cast iron brake shoes	30.00 to 31.00
Stove plate	30.00 to 31.00
Cast iron car wheels	35.00 to 36.00
Malleable	29.00 to 30.00

New York

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$17.50 to \$18.50
No. 2 hvy. melting	16.00 to 17.00
No. 2 bundles	15.00 to 15.50
Machine shop turn.	9.50 to 10.00
Mixed bor. and turn.	8.50 to 9.50
Shoveling turnings	10.00 to 11.00
Clean cast chem. bor.	15.00 to 15.50
No. 1 machinery cast.	32.00 to 34.00
Mixed yard cast.	28.00 to 29.00
Charging box cast.	23.00 to 25.00
Heavy breakable cast.	23.00 to 25.00
Unstrp. motor blocks	21.00 to 22.00

Boston

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$17.00 to 18.00
No. 2 hvy. melting	15.00 to 16.00
No. 1 bundles	17.00 to 18.00

No. 2 bundles	\$15.00 to \$15.50
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	8.50 to 9.00
Shoveling turnings	9.00 to 9.50
No. 2 busheling	10.00 to 11.00
Clean cast chem. borings	11.00 to 12.00
No. 1 machinery cast.	31.00 to 32.00
No. 2 machinery cast.	26.00 to 28.00
Heavy breakable cast.	18.50 to 19.00
Stove plate	30.50 to 31.50

Detroit

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$21.00 to \$22.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles	23.00 to 24.00
New busheling	21.00 to 22.00
Flashings	21.00 to 22.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	14.00 to 16.00
Cast iron borings	14.00 to 16.00
Low phos. plate	21.00 to 22.00
No. 1 cupola cast	34.00 to 35.00
Heavy breakable cast	28.00 to 30.00
Stove plate	27.00 to 28.00
Automotive cast	34.00 to 35.00

Cincinnati

Per gross ton, f.o.b. cars:	
No. 1 hvy. melting	\$24.50 to \$25.00
No. 2 hvy. melting	20.50 to 21.00
No. 1 bundles	24.50 to 25.00
No. 2 bundles	18.50 to 19.00
Machine shop turn.	12.50 to 13.00
Mixed bor. and turn.	12.50 to 13.00
Shovelings turnings	15.50 to 16.00
Cast iron borings	14.50 to 15.00
Low phos. 18 in. under	31.50 to 32.00
Rails, random lengths	33.00 to 34.00
Rails, 18 in. and under	41.00 to 42.00
No. 1 cupola cast	37.00 to 38.00
Hvy. breakable cast	31.00 to 32.00
Drop broken cast	41.00 to 42.00

San Francisco

No. 1 hvy. melting	\$17.00
No. 2 hvy. melting	15.00
No. 1 bundles	18.00
No. 2 bundles	14.00
No. 3 bundles	10.00
Machine shop turn	9.00
Elec. fur 1 ft and under	28.00
No. 1 RR. hvy. melting	17.00
Scrap rails, random lgth.	17.00
No. 1 cupola cast	30.00

Los Angeles

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	18.00
No. 1 bundles	18.00
No. 2 bundles	14.00
No. 3 bundles	10.00
Machine shop turn.	12.00
Elec. fur 1 ft and under	30.00
No. 1 RR. hvy. melting	30.00
No. 1 cupola cast	\$32.00 to \$36.00

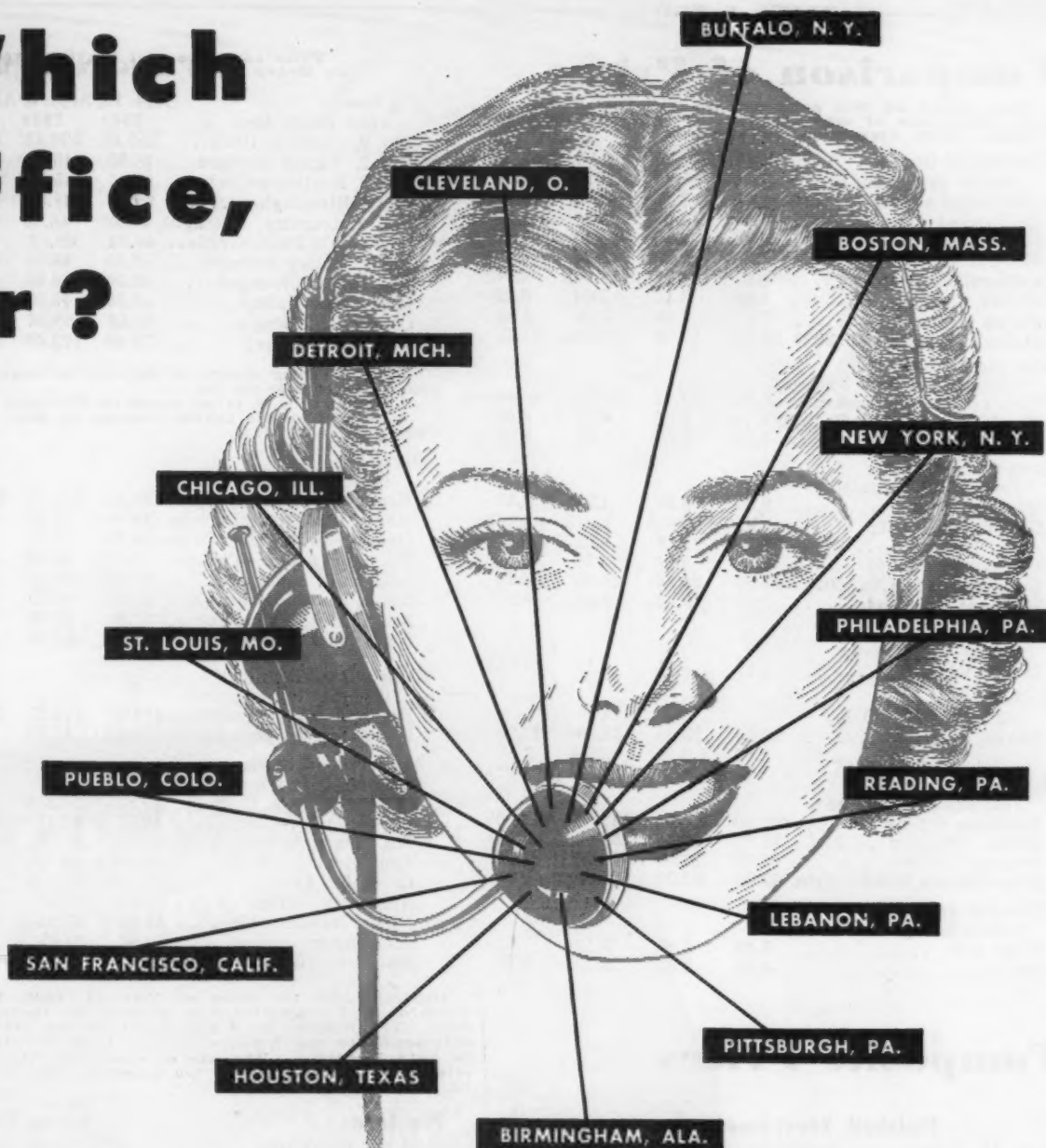
Seattle

No. 1 hvy. melting	\$16.00
No. 2 hvy. melting	14.00
No. 1 bundles	15.00
No. 2 bundles	15.00
No. 3 bundles	12.00
Elec. fur 1 ft and under	21.00
RR. hvy. melting	19.00
No. 1 cupola cast	\$20.00 to 27.00
Heavy breakable cast.	20.00

Hamilton, Ont.

Cast grades f.o.b. shipping point:	
No. 1 hvy. melting	\$20.00
No. 1 bundles	20.00
No. 2 bundles	19.50
Mechanical bundles	18.00
Mixed steel scrap	16.00
Mixed bor. and turn.	14.00
Rails, remelting	20.00
Rails, rerolling	22.00
Bushelings	14.50
Bush., new fact, prep'd.	18.00
Bush., new fact, unprep'd.	13.00
Short steel turnings	14.00
Cast scrap	\$33.00 to 35.00

Which office, sir?



Since 1889 Luria Brothers and Company, Inc. have pursued a policy of better service made possible by years of "know how" and personnel who have the desire to please.

The expansion of our organization, with offices located in 15 major cities, is in accordance with our policy to give better service to our customers.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

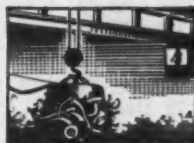
LURIA BROTHERS AND COMPANY, INC.

Main Office

LINCOLN-LIBERTY BLDG.
Philadelphia 7, Pennsylvania

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MODENA, PA. • PITTSBURGH, PA.
ERIE, PA.



Branch Offices

BIRMINGHAM, ALA. Empire Bldg.	CHICAGO, ILL. 100 W. Monroe St.	HOUSTON, TEXAS 803-4-5 Milam Bldg.	PITTSBURGH, PA. Oliver Bldg.
BOSTON, MASS. Statler Bldg.	CLEVELAND, O. 1022 Midland Bldg.	LEBANON, PA. Luria Bldg.	PUEBLO, COLO. 334 Colorado Bldg.
BUFFALO, N.Y. Genesee Bldg.	DETROIT, MICH. 2011 Book Bldg.	NEW YORK, N.Y. Woolworth Bldg.	READING, PA. Luria Bldg.
ST. LOUIS, MO. 2110 Railway Exchange Bldg.		SAN FRANCISCO, CAL. Pacific Gas & Elec. Co., Bldg.	

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

September 15, 1949

Comparison of Prices

Steel prices on this page are the average of various local quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(cents per pound)	1949	1949	1949	1948
Hot-rolled sheets	3.25	3.25	3.25	3.26
Cold-rolled sheets	4.00	4.00	4.00	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.265
Cold-rolled strip	4.038	4.038	4.038	4.063
Plates	3.40	3.40	3.40	3.42
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	33.00	33.00	33.00	33.25

Tin and Terneplate:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(dollars per base box)				
Tinplate (1.50 lb) cokes	\$7.75	\$7.75	\$7.75	\$6.80
Tinplate, electro (0.50 lb)	6.70	6.70	6.70	6.00
Special coated mfg. ternes	6.65	6.65	6.65	5.90

Bars and Shapes:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(cents per pound)				
Merchant bars	3.35	3.35	3.35	3.37
Cold-finished bars	3.995	3.995	3.995	3.995
Alloy bars	3.75	3.75	3.75	3.75
Structural shapes	3.25	3.25	3.25	3.25
Stainless bars (No. 302)	28.50	28.50	28.50	28.25
Wrought iron bars	9.50	9.50	9.50	9.50

Wire:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(cents per pound)				
Bright wire	4.15	4.15	4.15	4.256

Rails:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(dollars per 100 lb)				
Heavy rails	\$3.20	\$3.20	\$3.20	\$3.20
Light rails	3.55	3.55	3.55	3.55

Semifinished Steel:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(dollars per net ton)				
Rerolling billets	\$52.00	\$52.00	\$52.00	\$52.00
Slabs, rerolling	52.00	52.00	52.00	52.00
Forging billets	61.00	61.00	61.00	61.00
Alloy blooms, billets, slabs	63.00	63.00	63.00	63.00

Wire rod and Skelp:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(cents per pound)				
Wire rods	3.40	3.40	3.40	3.619
Skelp	3.25	3.25	3.25	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(per gross ton)	1949	1949	1949	1948
No. 2, foundry, Phila.	\$50.42	\$50.42	\$50.56*	\$51.56
No. 2, Valley furnace	46.50	46.50	46.50	43.50
No. 2, Southern Cin'ti	45.47	45.47	45.47*	49.47
No. 2, Birmingham	39.38	39.38	39.38	43.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	43.00
Basic del'd Philadelphia	49.92	49.92	49.74*	50.76
Basic, Valley furnace	46.00	46.00	46.00	43.00
Malleable, Chicago†	46.50	46.50	46.50	43.50
Malleable, Valley	46.50	46.50	46.50	43.50
Charcoal, Chicago	68.56	68.56	73.78	69.55
Ferromanganese‡	173.40	173.40	173.40	145.00

†The switching charge for delivery to foundries in the Chicago district is \$1 per ton.

‡Average of U. S. prices quoted on Ferroalloy page. Does not include interim increase on total freight charges effective Jan. 11, 1949.

Scrap:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(per gross ton)				
Heavy melt'g steel, P'gh.	\$28.25	\$24.75	\$22.75	\$42.75
Heavy melt'g steel, Phila.	23.50	22.50	18.25	45.00
Heavy melt'g steel, Ch'go	25.50	24.50	22.50	41.75
No. 1 hy. comp. sh't Det.	23.50	23.50	16.50	38.00
Low phos. Young'n.	29.75	29.75	24.75	47.75
No. 1, cast, Pittsburgh	39.50	36.50	34.50	65.00
No. 1, cast, Philadelphia	37.00	33.50	30.00	65.50
No. 1, cast, Chicago	42.50	41.50	40.50	71.00

Coke: Connellsville:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(per net ton at oven)				
Furnace coke, prompt	\$14.25	\$14.25	\$14.25	\$15.00
Foundry coke, prompt	15.75	15.75	15.75	17.00

Nonferrous Metals:	Sept. 13, 1949	Sept. 6, 1949	Aug. 16, 1949	Sept. 14, 1948
(cents per pound to large buyers)				
Copper, electro, Conn.	17.625	17.625	17.625	23.50
Copper, Lake Conn.	17.75	17.75	17.75	23.625
Tin, Grade A, New York	\$1.03	\$1.03	\$1.03	\$1.03
Zinc, East St. Louis	10.00	10.25	10.00	15.00
Lead, St. Louis	14.925	14.925	14.80	19.30
Aluminum, virgin	17.00	17.00	17.00	16.00
Nickel electrolytic	42.93	42.93	42.93	42.90
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	38.50	38.50	38.50	35.00

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

Composite Prices

Finished Steel Base Price	Sept. 13, 1949
One week ago	3.705¢ per lb.
One month ago	3.705¢ per lb.
One year ago	3.720¢ per lb.

High	Low
1949.... 3.720¢ Jan. 1	3.705¢ May 3
1948.... 3.721¢ July 27	3.193¢ Jan. 1
1947.... 3.193¢ July 29	2.848¢ Jan. 1
1946.... 2.848¢ Dec. 31	2.464¢ Jan. 1
1945.... 2.464¢ May 29	2.396¢ Jan. 1
1944.... 2.396¢	2.396¢
1943.... 2.396¢	2.396¢
1942.... 2.396¢	2.396¢
1941.... 2.396¢	2.396¢
1940.... 2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939.... 2.35367¢ Jan. 3	2.26689¢ May 16
1938.... 2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937.... 2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936.... 2.32263¢ Dec. 28	2.05200¢ Mar. 10
1935.... 2.07642¢ Oct. 1	2.06492¢ Jan. 8
1934.... 2.15367¢ Apr. 24	1.95757¢ Jan. 2
1933.... 1.95578¢ Oct. 3	1.75836¢ May 2
1932.... 1.89196¢ July 5	1.83901¢ Mar. 1
1931.... 1.99626¢ Jan. 13	1.86586¢ Dec. 29
1929.... 2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Pig Iron	Sept. 13, 1949
One week ago	45.88 per gross ton
One month ago	45.91 per gross ton
One year ago	44.74 per gross ton

High	Low
1949.... \$46.82 Jan. 4	\$45.88 Sept. 6
1948.... 46.91 Oct. 12	39.58 Jan. 6
1947.... 37.98 Dec. 30	30.14 Jan. 7
1946.... 30.14 Dec. 10	25.37 Jan. 1
1945.... 25.37 Oct. 23	23.61 Jan. 2
1944.... \$23.61	\$23.61
1943.... 23.61	23.61
1942.... 23.61	23.61
1941.... \$23.61 Mar. 20	\$23.45 Jan. 2
1940.... 23.45 Dec. 23	22.61 Jan. 2
1939.... 22.61 Sept. 19	20.61 Sept. 12
1938.... 23.25 June 21	19.61 July 6
1937.... 23.25 Mar. 9	20.25 Feb. 16
1936.... 19.74 Nov. 24	18.73 Aug. 11
1935.... 18.84 Nov. 5	17.83 May 14
1934.... 17.90 May 1	16.90 Jan. 27
1933.... 16.90 Dec. 5	13.56 Jan. 3
1932.... 14.81 Jan. 5	13.56 Dec. 6
1931.... 15.90 Jan. 6	14.79 Dec. 15
1929.... 18.71 May 14	18.21 Dec. 17

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel	Sept. 13, 1949
One week ago	\$25.75 per gross ton
One month ago	23.92 per gross ton
One year ago	21.17 per gross ton

High	Low
1949.... \$43.00 Jan. 1	\$19.33 June 28
1948.... 43.16 July 27	39.75 Mar. 9
1947.... 42.58 Oct. 28	29.50 May 20
1946.... 31.17 Dec. 24	19.17 Jan. 1
1945.... 19.17 Jan. 2	18.92 May 22
1944.... 19.17 Jan. 11	15.76 Oct. 24
1943.... \$19.17	\$19.17
1942.... 19.17	19.17
1941.... \$22.00 Jan. 7	\$19.17 Apr. 10
1940.... 21.83 Dec. 30	16.04 Apr. 9
1939.... 22.50 Oct. 3	14.08 May 16
1938.... 15.00 Nov. 22	11.00 June 7
1937.... 21.92 Mar. 30	12.67 June 9
1936.... 17.75 Dec. 21	12.67 June 8
1935.... 13.42 Dec. 10	10.33 Apr. 29
1934.... 13.00 Mar. 13	9.50 Sept. 25
1933.... 12.25 Aug. 8	6.75 Jan. 8
1932.... 8.50 Jan. 12	6.43 July 5
1931.... 11.33 Jan. 6	8.50 Dec. 29
1929.... 17.58 Jan. 29	14.08 Dec. 8

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Printed
 Sept. 14,
 1948
 \$51.56
 43.50
 49.47
 43.38
 43.00
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\$42.75
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*For a Better
 and secure tomorrow*
 AMERICA NEEDS **SCRAP** TODAY
 To assure a bright future for the Youth of
 today — America's industry needs an ever-
 increasing amount of Scrap NOW.

Over 50 Years
ALTER
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1700 ROCKINGHAM ROAD DAVENPORT 2, IOWA

Cast Iron
 Electric Furnace Grades
 Open Hearth
 Foundry Steel
 Sheet Iron for Baling
 Stainless Steel
 Non-Ferrous Metals

September 15, 1949

STEEL PRICES

Smaller numbers indicate producing companies. See key on facing page.
Base prices at producing points apply to the sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		Detroit	Johnstown	Seattle, S. Frisco, Los Angeles	Fontana
INGOTS															
Carbon forging	\$50.00											\$50.00			
Alloy	\$51.00											\$51.00			
BILLETS, BLOOMS, SLABS															
Carbon, re-rolling, net ton	\$52.00	\$52.00	\$52.00		\$52.00	\$52.00	Conshohocken \$52.00 ²⁰						\$52.00		\$71.00
Carbon forging billets, net ton	\$61.00	\$61.00	\$61.00	\$61.00	\$61.00	\$61.00	Geneva \$61.00 ¹⁶ Conshohocken \$63.00 ²⁰			Warren \$61.00 ²¹		\$61.00	\$61.00		\$80.00
Alloy, net ton	\$63.00	\$63.00	\$63.00			\$63.00	Bethlehem ³ Canton ⁴ & ⁴² Massillon ¹ = \$63.00			Conshohocken \$65.00 ²⁰		\$63.00	\$63.00		\$82.00
PIPE SKELP	3.25		3.40				3.25			Warren = 3.25 ⁴					
WIRE RODS	3.40	3.40		3.40	3.40		3.40	3.50	Portsmouth 3.40 ²⁰	Worcester = 3.70 ²			3.40	4.05 ²⁴ S.F., L.A. 4.20 ²² L.A.	
SHEETS															
Hot-rolled	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	Kokomo ³⁰ Warren ⁴ Ashland ⁷ = 3.25		3.45			3.95 S.F., L.A.	4.15
Cold-rolled	4.00 ¹⁻⁶ 7.9.15.68		4.00	4.00	4.00	4.00	4.00	4.00	4.20	4.00	Warren = 4.00 ⁴	4.20		4.95 S.F.	4.90
Galvanized (10 gage)	4.40		4.40		4.40		Niles = 4.40 ²⁴	4.40	Canton = 4.40 ⁴	4.40	Ashland = 4.40 ⁷			5.15 S.F., L.A.	
Enameling (12 gage)	4.40		4.40	4.40			4.40		4.60	4.40		4.70			
Long ternes (10 gage)	4.80		4.80							4.80					
Hi Str. Low Alloy, h.r.	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	Warren = 4.95 ⁴	Conshohocken 4.95 ²⁰		5.15			
Hi Str Low Alloy, c.r.	6.05		6.05	6.05		6.05	6.05	6.05	Warren = 6.05 ⁴			6.25			
Hi Str. Low Alloy, galv.	6.75			6.75				6.75	Canton 6.75 ⁴						
STRIP															
Hot-rolled	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	Ashland 3.25 ⁷	3.25	Warren = 3.25 ⁴	3.45	Atlanta 3.40 ²	4.00	4.40
Cold-rolled	4.00	4.15	4.00	4.00		4.00	4.00	4.00		New Haven = 4.50 ²⁴ Warren 4.00 ⁴ , ⁴² to 4.25 ⁴²		4.20			4.90
Hi Str. Low Alloy, h.r.	4.95		4.95	4.95	4.95	4.95	4.95	4.95		Warren 4.95 ⁴		5.15			
Hi Str Low Alloy, c.r.	6.05			6.05		6.05	6.05	6.05		Warren 6.05 ⁴		6.25		4.00 ²⁴ S.F., L.A. 4.20 ²² S.	
TINPLATE*															
Cokes, 1.50 lb. base box	\$7.75		\$7.75		\$7.85			\$7.85	\$7.95	Warren = \$7.75 ⁴				18.50 S.F.	
Electrolytic 0.25, 0.50, 0.75 lb. box															
Deduct \$1.30, \$1.05 and 75¢ respectively from 1.50 lb. coke base box price															
BLACKPLATE, h.e., 29 ga.	5.30		5.30					5.40	5.50	Warren = 5.30 ⁴					
BARS															
Carbon Steel	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	Atlanta = 3.50 ²⁵	Warren = 3.75 ²⁵	Canton = 3.35 ⁴	3.55	3.35	4.05 ²⁴ L.A. 4.05 ²⁴ S.F., L.A. 4.10 ²² S., S.F.	4.00
Reinforcing	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	Atlanta = 3.50 ²⁵		Canton = 3.35 ⁴		3.35		4.00
Cold-finished	3.95 ⁵ 4.00 69.4.71.2. 17.52	4.00 2.23.69. 70	4.00 74.4.73	4.00 2.61		4.00 70	4.00 6.57		Putnam, Newark = 4.40 ²⁰ Cumberland = 3.85 ⁷² Massillon, Canton = 4.00 ⁴			4.30			
Alloy, hot-rolled	3.75	3.75	3.75			3.75	3.75		Bethlehem ³ Canton ⁴ & ⁴² Massillon ¹ = 3.75			4.05	3.75	4.80 L.A.	4.75
Alloy cold-drawn	4.65	4.65	4.65	4.65		4.65	4.65		Massillon = 4.65 ⁴ Bethlehem = 4.65 ³	Worcester = 4.95 ²			Canton = 4.85 ⁴ & ⁴² Warren = 4.85 ²⁵		Newark, N. J. = 4.90 ⁴
Hi Str. Low Alloy, h.r.	5.10		5.10	5.10	5.10	5.10	5.10		Bethlehem = 5.10 ³			5.30	5.10		
PLATE															
Carbon steel	3.40	3.40	3.40	3.40	3.40 ⁴ & ¹¹	3.40 ³¹	3.40 ³³	3.40 ³	3.40 ³ Coatesville = 3.50 ²¹ Claymont = 3.50 ²⁰ Geneva = 3.40 ¹⁶ Harrisburg = 3.50 ²⁵			3.65	3.40	4.30 S.	4.00
Floor plates	4.55	4.55	4.55	4.55					Conshohocken ²⁰ Harrisburg ²⁵ = 4.55						
Alloy	4.40	4.40	4.40					4.40	Coatesville = 4.50 ²¹				4.40		
Hi Str. Low Alloy	5.20	5.20	5.20	5.10	5.20		5.20	5.20	Conshohocken = 5.20 ²⁰ Geneva = 5.20 ¹⁶			5.45	5.20		
SHAPES, Structural															
Hi Str. Low Alloy	3.25	3.25	3.25		3.25	3.30			Bethlehem = 3.30 ³ Geneva = 3.25 ¹⁶ Minnequa, Colo. = 3.75 ¹⁴				3.30	3.90 ²³ S.F. 3.85 ²³ L.A.	3.80
MANUFACTURERS' WIRE															
Bright	4.15	4.15 ⁴ & ³³		4.15	4.15	Portsmouth 4.15 ²⁰	4.15	4.25	Duluth = 4.15 ² Worcester = 4.45 ² Pueblo = 4.50 ¹⁴			4.15		5.10 ²⁴ S.F.	

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	Chromium Nickel							Straight Chromium		
	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling.....	12.75	13.50	15.00	15.50	22.75	18.25	29.00	11.25	13.75	11.50
Slabs, billets, rerolling.....	17.00	18.25	20.25	19.25	30.25	24.50	26.75	15.90	18.90	15.25
Forg. discs, die blocks, rings.	30.50	30.50	33.00	32.00	49.00	36.50	41.00	24.50	25.00	25.00
Billets, forging.....	24.25	24.25	26.25	25.50	39.00	29.90	32.75	19.50	20.00	30.00
Bars, wire, structurals.....	29.50	29.50	31.00	30.00	46.00	34.00	38.50	23.00	23.50	23.50
Plates.....	32.00	32.00	34.80	34.00	50.50	39.50	44.00	26.00	26.50	26.50
Sheets.....	37.50	37.50	39.50	39.50	53.00	45.50	50.00	33.00	33.50	35.50
Strip, hot-rolled.....	24.25	25.75	30.00	27.75	46.00	34.50	38.75	21.25	28.00	21.75
Strip, cold-rolled.....	30.50	33.00	36.50	35.00	55.00	44.50	48.50	27.00	33.50	27.50

Numbers correspond to producers. See Key below.

PRODUCING POINTS—*Sheets*: Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38, 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary 1; Bridgeville, Pa., 59; New Castle, Ind., 56; Lockport, N. Y., 46.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 49; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1, 67; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Chicago, 67; Trenton, N. J., 45; Harrison, N. J., 80.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

Plates: Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

KEY TO STEEL PRODUCERS

With Home Offices

- 1 Carnegie-Illinois Steel, Corp., Pittsburgh
- 2 American Steel & Wire Co., Cleveland
- 3 Bethlehem Steel Co., Bethlehem
- 4 Republic Steel Corp., Cleveland
- 5 Jones & Laughlin Steel Corp., Pittsburgh
- 6 Youngstown Sheet & Tube Co., Youngstown
- 7 Armco Steel Corp., Middletown, Ohio
- 8 Inland Steel Co., Chicago
- 9 Weirton Steel Co., Weirton, W. Va.
- 10 National Tube Co., Pittsburgh
- 11 Tennessee Coal, Iron & R.R. Co., Birmingham
- 12 Great Lakes Steel Corp., Detroit
- 13 Sharon Steel Corp., Sharon, Pa.
- 14 Colorado Fuel & Iron Corp., Denver
- 15 Wheeling Steel Corp., Wheeling, W. Va.
- 16 Geneva Steel Co., Salt Lake City
- 17 Crucible Steel Co. of America, New York
- 18 Pittsburgh Steel Co., Pittsburgh
- 19 Kaiser Co., Inc., Oakland, Calif.
- 20 Portsmouth Steel Corp., Portsmouth, Ohio
- 21 Lukens Steel Co., Coatesville, Pa.
- 22 Granite City Steel Co., Granite City, Ill.
- 23 Wisconsin Steel Co., South Chicago, Ill.
- 24 Columbia Steel Co., San Francisco
- 25 Copperweld Steel Co., Glassport, Pa.
- 26 Alcoa Wood Steel Co., Conshohocken, Pa.
- 27 Midvale Co., Philadelphia
- 28 Allegheny Ludlum Steel Corp., Pittsburgh
- 29 Worth Steel Co., Claymont, Del.
- 30 Continental Steel Corp., Kokomo, Ind.
- 31 Rotary Electric Steel Co., Detroit
- 32 Laclede Steel Co., St. Louis
- 33 Northwestern Steel & Wire Co., Sterling, Ill.
- 34 Keystone Steel & Wire Co., Peoria, Ill.
- 35 Central Iron & Steel Co., Harrisburg, Pa.
- 36 Carpenter Steel Co., Reading, Pa.
- 37 Eastern Stainless Steel Corp., Baltimore
- 38 Washington Steel Corp., Washington, Pa.
- 39 Jessop Steel Co., Washington, Pa.
- 40 Blair Strip Steel Co., New Castle, Pa.
- 41 Superior Steel Corp., Carnegie, Pa.
- 42 Timken Steel & Tube Div., Canton, Ohio
- 43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
- 44 American Chain & Cable Co., Inc., New York
- 45 John A. Roebling's Sons Co., Trenton, N. J.
- 46 Simonds Saw & Steel Co., Fitchburg, Mass.
- 47 McLouth Steel Corp., Detroit
- 48 Cold Metal Products Co., Youngstown
- 49 Thomas Steel Co., Warren, Ohio
- 50 Wilson Steel & Wire Co., Chicago
- 51 Sweet's Steel Co., Williamsport, Pa.
- 52 Superior Drawn Steel Co., Monaca, Pa.
- 53 A. M. Byers Co., Pittsburgh
- 54 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
- 55 Ingersoll Steel Div., Chicago
- 56 Latrobe Electric Steel Co., Latrobe, Pa.
- 57 Fitzsimons Steel Co., Youngstown
- 58 Stanley Works, New Britain, Conn.
- 59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
- 60 Vanadium-Alloys Steel Co., Latrobe, Pa.
- 61 Guyhago Steel & Wire Co., Cleveland
- 62 Bethlehem Pacific Coast Steel Corp., San Francisco
- 63 Follansbee Steel Corp., Pittsburgh
- 64 Niles Rolling Mill Co., Niles, Ohio
- 65 Atlantic Steel Co., Atlanta
- 66 Acme Steel Co., Chicago
- 67 Joslyn Mfg. & Supply Co., Chicago
- 68 Detroit Steel Corp., Detroit
- 69 Wyckoff Steel Co., Pittsburgh
- 70 Bliss & Laughlin, Inc., Harvey, Ill.
- 71 Columbia Steel & Shaffing Co., Pittsburgh
- 72 Cumberland Steel Co., Cumberland, Md.
- 73 La Salle Steel Co., Chicago
- 74 Monarch Steel Co., Inc., Indianapolis
- 75 Empire Steel Co., Mansfield, Ohio
- 76 Mahoning Valley Steel Co., Niles, Ohio
- 77 Oliver Iron & Steel Co., Pittsburgh
- 78 Pittsburgh Screw & Bolt Co., Pittsburgh
- 79 Standard Forgings Corp., Chicago
- 80 Driver Harris Co., Harrison, N. J.

Notes to Steel Price Table:

*Special coated mfg. terms, deduct \$1.10 from 1.50-lb coke base box price. Can-making quality blackplate, 55 to 123-lb, deduct \$2.00 from 1.50-lb coke base box.

PIPE AND TUBING

Base discounts, f.o.b. mills,
Base price, about \$200.00 per net ton.

Standard, Threaded and Coupled

Steel, butt weld*	Black	Galv.
1/2-in.	43 to 41	26 1/2 to 24 1/2
3/4-in.	46 to 44	30 1/2 to 28 1/2
1-in.	48 1/2 to 46 1/2	33 1/2 to 31 1/2
1 1/4-in.	49 to 47	34 to 32
1 1/2-in.	49 1/2 to 47 1/2	34 1/2 to 32 1/2
2-in.	50 to 48	35 to 33
2 1/2 to 3-in. ..	50 1/2 to 48 1/2	35 1/2 to 33 1/2

Steel, lap weld	Black	Galv.
2-in.	39 1/2	26 to 24
2 1/2 to 3-in. ..	43 1/2 to 42 1/2	25 to 27
3 1/2 to 6-in. ..	46 1/2 to 42 1/2	31 to 27

Steel, seamless	Black	Galv.
2-in.	38 1/2 to 27	23 to 11 1/2
2 1/2 to 3-in. ..	41 1/2 to 32 1/2	26 to 17
3 1/2 to 6-in. ..	43 1/2 to 34 1/2	28 to 23

Wrought iron, butt weld	Black	Galv.
1/2-in.	+20 1/2	+47
3/4-in.	+10 1/2	+36
1 & 1 1/4 in. ..	+4 1/2	+27
2-in.	— 1 1/2	+23 1/2
3-in.	— 2	+23

Wrought iron, lap weld	Black	Galv.
2-in.	+7 1/2	+31
2 1/2 to 3 1/2-in. ..	+5	+26 1/2
4-in.	— list	+20 1/2
4 1/2 to 8-in. ..	+2	+23

Extra Strong, Plain Ends

Steel, butt weld	Black	Galv.
1/2-in.	42 to 40	27 to 25
3/4-in.	46 to 44	31 to 29
1-in.	48 to 46	34 to 32
1 1/4-in.	48 1/2 to 46 1/2	34 1/2 to 32 1/2
1 1/2-in.	49 to 47	35 to 33
2-in.	49 1/2 to 47 1/2	35 1/2 to 34 1/2
2 1/2 to 3-in. ..	50 to 48	36 to 34

Steel, lap weld	Black	Galv.
2-in.	39 1/2 to 38 1/2	25 to 24
2 1/2 to 3-in. ..	44 1/2 to 42 1/2	30 to 28
3 1/2 to 6-in. ..	48 to 44	33 1/2 to 31 1/2

Steel, seamless	Black	Galv.
2-in.	37 1/2 to 32 1/2	23 to 18
2 1/2 to 3-in. ..	41 1/2 to 36 1/2	27 to 23
3 1/2 to 6-in. ..	45	30 1/2

Wrought iron, butt weld	Black	Galv.
1/2-in.	+16	+40
3/4-in.	+9 1/2	+34
1 to 2-in.	— 1 1/2	+23

Wrought iron, lap weld	Black	Galv.
2-in.	+4 1/2	+27 1/2
2 1/2 to 4-in. ..	— 5	+16
4 1/2 to 6-in. ..	— 1	+20 1/2

For threads only, butt weld, lap weld and seamless pipe, one point higher discount (lower price) applies. For plain ends, butt weld, lap weld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lap weld and seamless 3 1/2-in. and larger four points higher discount (lower price) applies. On butt weld and lap weld steel pipe, jobbers are granted a discount of 5 pct. *Fontana, Calif., deduct 11 points from figures in left columns.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut length 4 to 24 ft inclusive.

OD	Gage	Seamless	Electric Weld
in.	in.	H.R.	H.R.
2	13	\$19.18	\$22.56
2 1/2	12	25.79	30.33
3	12	28.68	33.76
3 1/2	11	35.85	42.30
4	10	44.61	52.35

CAST IRON WATER PIPE

	Per net ton
6 to 24-in., del'd Chicago	\$95.70
6 to 24-in., del'd N. Y.	\$92.50 to 97.40
6 to 24-in., Birmingham	\$2.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	109.30
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

Numbers after producing points correspond to steel producers. See key on previous page.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column Pittsburg, Calif.
Standard & coated nails* 103	122
Galvanized nails* 103	122
Woven wire fence† 109	122
Fence posts, carloads†† 112	...
Single loop bale ties 106	130
Galvanized barbed wire** 123	143
Twisted barless wire 123	...

* Pgh., Chi., Duluth; Worcester, 6 columns higher. † 15 1/2 gage and heavier. ** On 30 rod spools, in carloads. †† Duluth, Joliet and Johnstown.

	Base per 100 lb	Pittsburg, Calif.
Annealed fence wire... \$4.80	\$5.75	
Annealed, galv. fencing‡ 5.25	6.20	
Cut nails, carloads‡‡ 6.75	...	

‡ Add 30¢ at Worcester; 10¢ at Sparrows Pt.

‡‡ Less 20¢ to jobbers.

PRODUCING POINTS — Standard, coated or galvanized nails, woven wire fence, bale ties, and barbed wire: Alabama City, Ala., 4; Atlanta, 65; Alliquippa, Pa. (except bale ties), 5; Bartonville, Ill. (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30; Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburg, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa. (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only), 24; Worcester (nails only), 2. Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51. Cut nails: Wheeling, W. Va., 15; Conshohocken, Pa., 26.

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa. (21)...	*26.50	
Washgtn, Pa. (38), (39)...	*26.50	*22.50
Claymont, Del. (29)...	*26.50	
Conshohocken, Pa. (26)...		*22.50
New Castle, Ind. (55)...	*26.50	*24.00
Nickel-carbon		
10 pct. Coatesville, (26)...	27.50	
Inconel-carbon		
10 pct. Coatesville, (21)...	36.00	
Monel-carbon		
10 pct. Coatesville, (21)...	29.00	
No. 302 Stainless-copper-		
stainless, Carnegie, Pa. (41)...		75.00
Aluminized steel sheets, Hot		
dip, Butler, Pa., (7)...		7.75

* Includes annealing and pickling, or sandblasting.

ELECTRICAL SHEETS

24 gage, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	5.45
Electrical	5.95
Motor	6.70
Dynamo	7.50
Transformer 72	8.05
Transformer 65	8.60
Transformer 58	9.30
Transformer 52	10.10

PRODUCING POINTS—Beech Bottom, W. Va., 18; Brackenridge, Pa., 28; Butler, Pa., 7; Follansbee, W. Va., 63; Granite City, Ill., 22; Indiana Harbor, Ind., 8; Mansfield, Ohio, 75; Niles, Ohio, 64; Toronto, Ohio, 63; Vandergrift, Pa., 1; Warren, Ohio, 4; Zanesville, Ohio, 7.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
1/4 in. & smaller x 6 in. & shorter...	35
9/16 & 1 in. x 6 in. & shorter...	37
3/4 in. & larger x 6 in. & shorter...	34
All diam., longer than 6 in.	30
Lag, all diam over 6 in. longer...	35
Lag, all diam x 6 in. & shorter...	37
Flow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)	
1/4 in. and smaller	35
9/16 to 1 in. inclusive	34
1 1/4 to 1 1/2 in. inclusive	32
1 1/2 in. and larger	27
On above bolts and nuts, excepting	
plow bolts, additional allowances of 15 pct	
for full container quantities. There is an	
additional 5 pct allowance for carload	
shipments.	

Semifinished Hexagon Nuts

	USS	SAE
7/16 in. and smaller	41	
1/4 in. and smaller	38	
1/4 in. through 1 in.	39	
9/16 in. through 1 in.	37	
1 1/4 in. through 1 1/2 in.	35	37
1 1/2 in. and larger	28	
In full case lots, 15 pct additional dis-		
count.		

Stove Bolts

Packages, nuts separate	\$61.75
In bulk	70.00

Large Rivets

	(1/4 in. and larger)
	Base per 100 lb
F.o.b. Pittsburgh, Cleveland, Chi-	
cago, Birmingham	\$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

	(7/16 in. and smaller)
	Pct Off List
F.o.b. Pittsburgh, Cleveland, Chicago,	
Birmingham	48

Cap and Set Screws

	(In packages)	Pct Off List
Hexagon head cap screws, coarse or		
fine thread, up to and incl. 1 in. x		
6 in., SAE 1020, bright	46	
3/4 to 1 in. x 6 in., SAE (1035),		
heat treated	35	
Milled studs	19	
Flat head cap screws, listed sizes	5	
Fillister head cap, listed sizes	28	

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢
Worcester, add 0.30¢.	

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

	Per gross ton
Old range, bessemer	\$7.60
Old range, nonbessemer	7.45
Mesabi, bessemer	7.35
Mesabi, nonbessemer	7.20
High phosphorus	7.20

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier,	
No. 1 quality, per 100 lb	\$3.20
Joint bars, 100 lb	4.25
Light rails per 100 lb	3.55

Base Price
cents per lb

Track spikes	5.35
Axles	5.20
Screw spikes	8.90
Tie plates	4.05
Tie plates, Pittsburgh, Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to rail-	
roads	8.50
*Seattle, add 30¢.	

PRODUCING POINTS—Standard rails: Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, Pa., 3; Minnequa, Colo., 14; Steelton, Pa., 3.

Light rails: All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown, Pa., 3.

Joint bars: Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3.

Track spikes: Fairfield, Ala., 11; Indiana Harbor, Ind., 6, 8; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 3; Chicago, 4; Struthers, Ohio, 6; Youngstown, 4.

Track bolts: Fairfield, Ala., 11; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 7, 78.

Axles: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 79; Johnstown, Pa., 3; McKees Rocks, Pa., 1.

Tie plates: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburgh, Calif., 24; Pittsburgh, 4; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24.

TOOL STEEL

F.o.b. mill

	W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	—	90.5¢
18	4	1	—	5	—	\$1.42
18	4	2	—	—	—	\$1.025
1.5	4	1.5	8	—	—	65¢
6	4	2	6	—	—	\$9.5¢
High-carbon-chromium						52¢
Oil hardened manganese						29¢
Special carbon						26.5¢
Extra carbon						22¢
Regular carbon						19¢

Warehouse prices on and east of Mississippi are 2 1/4¢ per lb higher. West of Mississippi, 1 1/4¢ higher.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	\$14.00 to \$14.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$15.50 to \$16.00
Foundry, oven coke	
Buffalo, del'd	\$20.90
Chicago, f.o.b.	20.40
Detroit, f.o.b.	19.40
New England, del'd	22.70
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	20.45
Swedeland, Pa., f.o.b.	20.40
Plainsville, Ohio, f.o.b.	20.90
Erie, del'd	\$20.25 to 21.04
Cincinnati, del'd	22.62
Cincinnati, f.o.b.	21.71
St. Paul, f.o.b.	22.50
St. Louis, del'd	21.60
Birmingham, del'd	18.75

FLUORSPAR

	Base price per net ton
Washed gravel fluorspar, f.o.b. cars,	
Rosiclare, Ill.	\$37.00
Effective CaF ₂ Content:	
70% or more	34.00
60% or less	34.00

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb.
(Metropolitan area delivery, add 15c to base price except Cincinnati
and New Orleans (*), add 10c; New York, Chicago and Boston, add 20c.)

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Baltimore	5.31	6.21- 6.41	6.95- 7.11	5.37	....	5.56	5.36	5.42	6.16	....	9.60- 10.10	....	....
Birmingham	4.85	5.75	6.15	4.85	....	5.10	4.90	4.90	6.50	....	....	....	....
Boston	5.55	6.45- 6.75	7.11- 7.61	5.60	6.75	5.75	5.42	5.52	6.02	9.36- 9.67	9.67- 9.87	10.72	11.02
Buffalo	4.85	5.75	7.42- 7.57	5.24	7.27	5.35	5.00	4.95	5.40	9.30	9.60	10.65	10.95
Chicago	4.85	5.75	6.85	4.85	5.45- 6.15	5.10	4.90	4.90	5.40	8.90	9.26	10.25	10.55
Cincinnati*	5.16- 5.51	5.84- 6.28	6.59- 6.93	5.26- 5.43	....	5.53- 5.85	5.33	5.33- 5.48	6.08- 6.20	9.74	9.98	11.19	11.44
Cleveland	4.85	5.75	6.70	5.03	....	5.21	5.01	5.01	5.45	9.05	9.35	10.40	10.70
Detroit	5.28- 5.32	6.07- 6.18	7.38- 7.50	5.27- 5.47	6.27- 6.58	5.52- 5.57	5.33- 5.40	5.33- 5.55	6.00- 6.16	9.67	9.92	11.11	11.35
Houston	6.70- 6.95	....	7.30	6.70	....	6.70	6.20- 6.70	5.65	7.69	10.45	10.40	11.45	11.70
Indianapolis	5.29	6.13	7.44	5.29	7.36	5.54	5.34	5.34	6.14	11.25	11.39	....	....
Kansas City	5.45	6.35	7.40- 7.45	5.45	6.05- 6.90 ^a	5.70	5.50	5.50	6.05	9.50	8.30	10.85	9.65
Los Angeles	6.45	7.90	7.45	6.85	7.35 ^a	6.15	5.95	6.10	7.98 ¹⁴	10.95 ¹⁵	10.90 ¹⁵	12.45 ¹⁵	12.70 ¹⁵
Memphis	5.75- 5.80	6.60	7.20	5.80- 5.95	6.80	5.95- 6.00	5.75	5.75	6.53	....	....	....	....
Milwaukee	5.03	5.93	7.02	5.03- 5.38	6.32	5.28	5.08	5.08	5.63	9.53	9.73	10.98	11.23
New Orleans*	5.95	6.75	....	6.15	....	6.15	5.95	5.95	6.85 ^a	....	....	....	....
New York	5.40	6.31	6.85- 6.90	5.62	6.76	5.85	5.33	5.57	6.31	9.28	9.58	10.63	10.93
Norfolk	9.06	....	....	6.20	....	6.05	6.05	6.05	7.05	....	....	....	....
Omaha	6.13	....	6.33	6.13	....	6.38	6.18	6.18	6.98	....	....	....	....
Philadelphia	5.05	6.24 ¹³	6.58	5.40	6.29	5.35	5.10	5.40	5.94	9.05	9.35	10.62	10.87
Pittsburgh	4.85	5.75	6.90	5.00	6.00	5.05	4.90	4.90	5.40	8.90	9.20	10.25	10.55
Portland	6.50 ^a - 7.05	8.00	8.80- 9.10	6.85 ^a	....	6.30 ^a	6.35 ^a	6.35 ^a	8.25 ¹⁴	10.50 ^a	10.10 ^a	....	....
Salt Lake City	7.05	7.05	8.65	7.45 ³	....	5.65 ³	5.50 ³	7.10 ^a	8.15	....	....	....	....
San Francisco	6.15 ^a	7.50 ^a	7.80	6.75 ^a	8.25 ³	6.35 ^a	5.90 ^a	5.90 ^a	7.55	10.90 ¹⁵	10.85 ¹⁵	12.40 ¹⁵	12.65 ¹⁵
Seattle	6.70 ^a - 7.10	8.15 ^a - 8.65	8.80	6.70 ^a	....	6.35 ^a	6.30 ^a	6.20 ^a	8.15 ¹⁴	....	10.35 ¹⁵	....	13.10 ¹⁵
St. Louis	5.22- 5.37	6.12- 6.27	7.32	5.22	6.68- 7.54	5.47	5.27	5.27	6.82	9.27- 9.72	9.57- 9.97	10.62- 11.12	10.92- 11.42
St. Paul	5.44	6.19- 6.34	7.54- 7.64	5.44	6.82	5.64- 6.69	5.49	5.49	6.04	9.49	9.79	10.84	11.14

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED:

Sheets, strip, plates, shapes and bars, 400 to 1900 lb.

COLD-ROLLED:

Sheets, 400 to 1499 lb strip, extras on all quantities. Bars 1000 lb and over.

ALLOY BARS:

1000 to 1999 lb.

GALVANIZED SHEETS:

450 to 1499 lb.

EXCEPTIONS:

(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 499 lb; (4) 300 to 999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1600 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb; (18) 1000 to 1499 lb; (19) 1500 to 3499 lb; (20) 6000 lb and over.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	48.50	49.00	49.50		Boston	Everett	\$0.50 Arb.		50.00	50.50		
Birmingham	38.88	39.38				Boston	Steelton	6.90					60.90
Buffalo	46.00	46.50	47.00			Brooklyn	Bethlehem	4.29		52.79	53.29	53.79	
Chicago	46.00	46.50	46.50	47.00		Cincinnati	Birmingham	6.70	45.58	46.08			
Cleveland	46.00	46.50	46.50	47.00	51.00	Jersey City	Bethlehem	2.63		51.13	51.63	52.13	
Duluth	46.00	46.50	46.50	47.00		Los Angeles	Geneva-Ironton	7.70	53.70	54.20			
Erie	46.00	46.50	46.50	47.00		Mansfield	Cleveland-Toledo	3.33	49.33	49.83	49.83	50.33	54.33
Everett		50.00	50.50			Philadelphia	Bethlehem	2.39	50.39	50.89	51.39	51.89	
Granite City	47.90	48.48	48.90			Philadelphia	Swedeland	1.44	49.44	49.94	50.44	50.94	
Ironton, Utah	46.00	46.50				Philadelphia	Steelton	3.09					57.09
Lone Star, Texas	46.00	46.50†				Rochester	Buffalo	2.63	48.63	49.13	49.63		
Neville Island	46.00	46.50	46.50			San Francisco	Geneva-Ironton	7.70	53.70	54.20			
Geneva, Utah	46.00	46.50				Seattle	Geneva-Ironton	7.70	53.70	54.20			
Sharpsville	46.00	46.50	46.50	47.00		St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65		
Steelton	48.00	48.50	49.00	49.50	54.00	Syracuse	Buffalo	3.58	49.58	50.08	50.58		
Struthers, Ohio	48.00					Gulf Ports	Lone Star, Texas		50.50	51.00†			
Swedeland	48.00	48.50	49.00	49.50									
Toledo	48.00	48.50	46.50	47.00									
Troy, N. Y.	48.00	48.50	49.00		54.00								
Youngstown	48.00	48.50	46.50	47.00									

† Low Phos., Southern Grade.

Producing point prices are subject to switching charges; silicon differential (not to exceed 50c per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 35c per ton for phosphorus content of 0.70 pct and over manganese differentials, a charge not to exceed 50c per ton for each 0.50 pct manganese

content in excess of 1.00 pct. 82 per ton extra may be charged for 0.5 to 0.75 pct nickel content and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 0.01 to 0.50 pct. C/L per g.t., f.o.b. Jackson, Ohio—\$59.50; f.o.b. Buffalo, \$60.75. Add \$1.00 per ton for each additional 0.50 pct Si up to 17 pct.

Add 50c per ton for each 0.50 pct Mn over 1.00 pct. Add \$1.00 per ton for 0.75 pct or more P. Bessemer ferro-silicon prices are \$1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus \$60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, \$68.50. High phosphorus charcoal pig iron is not being produced.

FERROALLOYS

Ferromanganese

78-82% Mn, Maximum contract base price, gross ton, lump size.	
F.o.b. Birmingham	\$174
F.o.b. Niagara Falls, Alloy, W. Va., Westland, Ont.	\$172
F.o.b. Johnstown, Pa.	\$174
F.o.b. Sheridan, Pa.	\$172
F.o.b. Etna, Pa.	\$175
\$2.00 for each 1% above 82% Mn, penalty, \$2.15 for each 1% below 78%.	
Briquets—Cents per pound of briquet, delivered, 66% contained Mn.	
Carload, bulk	10.45
Ton lots	12.05
Less ton lots	12.95

Spiegeleisen

Contract prices gross ton, lump, f.o.b.	
16-19% Mn	19-21% Mn
3% max. Si	3% max. Si
Palmerton, Pa.	\$64.00
Pgh. or Chicago	\$65.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.	
96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe	
Carload, packed	35.5
Ton lots	37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.	
Carloads	23
Ton lots	30
Less ton lots	32

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.			
	Carloads		Ton
			Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.20% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C			
7.00% max. Si	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.	
Carload bulk	8.95
Ton lots	10.60
Briquet, contract basis carlots, bulk delivered, per lb of briquet	10.30
Ton lots	11.90
Less ton lots	12.80

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Waukegan, Wash., \$77.00 gross ton, freight allowed to normal trade area; Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$73.50. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 for each 0.50% Mn over 1%.	
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Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.	
96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.	
Carload, bulk	6.30
Ton lots	7.90
Less ton lots	8.80

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size, bulk, in carloads, delivered.	
25% Si	17.00
50% Si	11.30
75% Si	12.50
85% Si	14.45
90-95% Si	16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.	Cast	Turnings	Distilled
Ton lots	\$2.05	\$2.95	\$3.75
Less ton lots..	2.40	3.30	4.55

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered.	
(65-72% Cr, 2% max. Si)	
0.06% C	25.75
0.10% C	25.25
0.15% C	24.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35
Briquets—Contract price, cents per pound of briquet, delivered, 60% chromium.	
Carload bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.	
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S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.	
High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.	
Carloads	21.60
Ton lots	23.75
Less ton lots	25.25
Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.	
Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, cents per lb chromium contained, delivered, ton lots. 97% min. Cr, 1% max. Fe.	
0.20% max. C	1.09
0.50% max. C	1.05
9.00% min. C	1.04

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	\$2.25
Ferrovandium, 35-55%, contract basis, delivered, per pound, contained V.	
Openhearth	\$2.90
Crucible	3.00
High speed steel (Primus)	3.10
Vanadium pentoxide, 88-92% V ₂ O ₅ , contract basis, per pound contained V ₂ O ₅	\$1.20
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	\$2.90
Less ton lots	2.95
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	\$1.10
Calcium molybdate, 45-50%, f.o.b. Langeloth, Pa., per pound contained Mo.	96¢
Molybdenum oxide briquets, f.o.b. Langeloth, Pa.; bags, f.o.b. Wash., Pa., per pound contained Mo.	95¢
Ferrotitanium, 40%, regular grade, 10% C max., f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	\$1.23
Ferrotitanium, 25%, low carbon, f.o.b. Niagara Falls, N.Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	\$1.40
Less ton lots	1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, carloads per net ton	\$160.00

Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton	\$65.00
10 tons to less carload	75.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00
Zirconium, 12-15%, contract basis, lump, delivered, per pound of alloy.	
Carload, bulk	6.00
Alaifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	7.40
Ton lots	8.30

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

Carloads, Per 1000	
First quality, Pa., Ky., Mo., Ill. (except Salina, Pa., add \$5)....	\$30.00
No. 1 Ohio	74.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	74.00
No. 2 Ohio	66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50)....	11.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$30.00
Childs, Pa.	34.00
Hays, Pa.	35.00
Chicago District	39.00
Western, Utah and Calif.	35.00
Super Duty, Hays, Pa., Athens, Tex.	\$35.00 to 35.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	\$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa.	14.00
Silica cement, net ton, bulk, Ensley, Ala.	15.00
Silica cement, net ton, bulk, Chicago District	\$14.75 to 15.00
Silica cement, net ton, bulk, Utah and Calif.	21.00

Chrome Brick

Standard chemically bonded, Balt., Chester	Per Net Ton \$69.00
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Magnesite Brick

Standard, Balt. and Chester	\$91.00
Chemically bonded, Balt. and Chester	89.00

Grain Magnesite

Std. ¾-in. grains	
Domestic, f.o.b. Balt. and Chester, in bulk, fines removed	\$56.00 to 54.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines	\$30.50 to 31.00
in sacks with fines	35.00 to 35.50

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk, Midwest, add 10¢; Missouri Valley, add 30¢	\$12.50
--	---------

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.	
Swedish sponge iron c.f.	7.9¢ to 9.0¢
New York, ocean bags...	9.0¢ to 10.0¢
Domestic sponge iron, 98+%	
Fe, carload lots	9.0¢ to 10.0¢
Electrolytic iron, annealed, 99.5+%	31.5¢ to 33.5¢
Electrolytic iron, unannealed, minus 325 mesh, 98+%	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+%	63.0¢ to 66.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.5+%	90.0¢ to 91.75
Aluminum	27.00
Antimony	27.75
Brass, 10 ton lots	23.00 to 25.25
Copper, electrolytic	27.75
Copper, reduced	27.65
Cadmium	32.40
Chromium, electrolytic, 99% min.	93.50
Lead	21.40
Manganese	48.00
Molybdenum, 99%	32.40
Nickel, unannealed	66.00
Nickel, spherical, minus 30 mesh, unannealed	63.00
Silicon	34.00
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.00
Tin	\$1.15 to \$1.30
Tungsten, 99%	\$2.90
Zinc, 10 ton lots	15.25 to 18.00

CONTINUOUS TUBE REHEATING

Seamless Tubing Production Line at **THE BABCOCK & WILCOX TUBE COMPANY** *Demonstrates Advantages of Speed-Heating with GAS*

CONTINUOUS REHEATING of seamless tubing, at production speeds integrated with piercing-mill and sizing-mill capacities, demonstrates some of the important advantages of high-speed heating with GAS.

Many types of carbon, alloy and stainless steels are used in the manufacture of seamless tubing at The Babcock & Wilcox Tube Company. During the early stages of tube formation the tubes drop in temperature before entering the sizing mill. The modern Gas-fired units in the Beaver Falls, Pennsylvania, plant perform this reheating operation at speeds up to 162 FPM for 6-inch tubing.

Another important factor is the precise temperature control which permits adjustment of production speeds to compensate for delivery from the rolling mill or the requirements of the sizing mill. In addition, the automatic controllability of GAS permits immediate adjustment of temperatures for any type of alloy tubing.

Battery of twelve continuous Gas-fired Selas heating units in which seamless tubes, on way to sizing mill, are reheated from 1300F to 1900F and above.

Some of the results, attributed to this high speed GAS heating system by production executives of The Babcock & Wilcox Tube Company include—

- fuel costs for reheating reduced 63% per ton
- output increased over 10% per hour
- product improved by absolute uniformity of heating
- maintenance costs reduced due to equipment simplicity

The versatility of GAS for high-speed heating has been demonstrated in all type of production operations. It's always well to keep in touch with the latest developments in effective utilization of GAS.



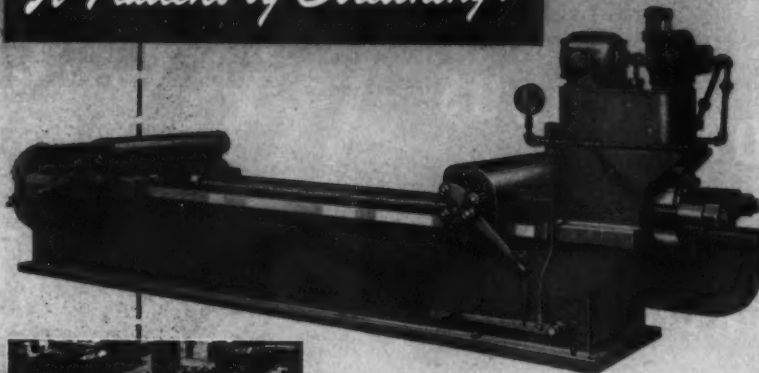
MORE AND MORE...

THE TREND IS TO GAS

AMERICAN GAS ASSOCIATION

420 LEXINGTON AVENUE • NEW YORK 17, NEW YORK

It Flattens by Stretching!



TORRINGTON HYDRAULIC STRETCHING MACHINE
ON THE JOB IN MONTREAL, CANADA

**Now you can flatten up to six sheets at a time
to a degree never before possible by other methods!**

By the *stretching* process, sheets may be flattened to a degree not possible by the use of a flattener or roller leveller. The metal sheets to be stretched are seized at each end by substantial jaw clamps which slowly separate under hydraulic pressure until all buckles and waves disappear. Mills often stretch as many as six sheets at a time!

Hand levers in the end of each jaw open and close the grips which seize the ends of the sheets. A push button controls the forward and backward movement of the screw-operated jaw. Movement of the stretching jaw is controlled by a foot lever which admits pressure into the cylinder. When released the jaw recedes slowly under the action of two powerful helical springs; and permits the release of sheets. Operator terminates stretching at any desired pressure.

Look at these Quality features:

- Jaws of steel castings with extra heavy sections!
- Grips of solid tool steel — double swinging type!
- One jaw operated by motor driven lead screws!
- Stretching jaw hydraulically operated!
- Rotary pump with separate motor!
- Automatic control valve — stretching speed diminished as the pressure increases!
- Heavy box type bed!
- Large diameter twin lead screws!

**Call or write Torrington today for more information
and name of nearest Torrington representative.**

The TORRINGTON

MANUFACTURING COMPANY TORRINGTON, CONNECTICUT



DESIGNERS AND BUILDERS OF MILL MACHINERY FOR OVER 60 YEARS

NEW

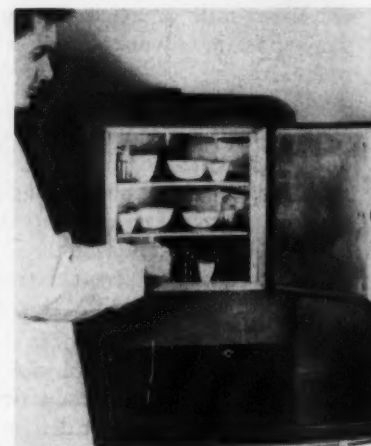
PRODUCTION IDEAS

Continued from Page 151

the hand-operated screw machine, the Speedi-Matic. This pusher type unit permits the use of a bar feed attachment and reduces operator fatigue. Two pushbuttons in the headstock of the machine control the opening and closing of the collet attachment. Applied to the cam-lock spindle nose, the collet adapter takes standard collets that handle $\frac{1}{8}$ to 1 in. round stock. The new attachment is only available for factory application to new lathes. Monarch Machine Tool Co. For more information, check No. 36 on the postcard on p. 35.

Laboratory Oven

Uniform temperature throughout the 10x12x12 in. aluminum heating chamber with a minimum consump-

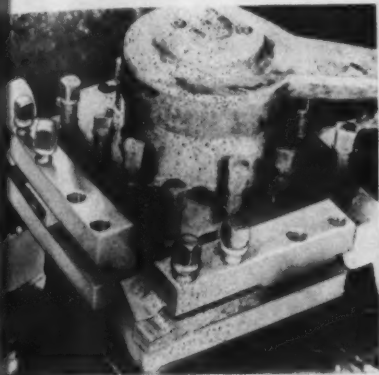


tion of current is claimed for a new forced draft Isotemp oven for general laboratory use. The oven has a motor-fan unit beneath the heating chamber and an arrangement of ducts and louvers that conduct hot, dry air to the heating chamber where the air moves gently against and completely around the sample. Once the selected operating temperature is attained, the oven will maintain that temperature within $\pm 1^\circ$. Current consumption is 500 w and the oven draws current about one-fifth of the time after reaching a pre-set temperature. The oven

provides 400 sq in. of shelf area. Samples can be dried in about 90 min. Fisher Scientific Co. For more information, check No. 37 on the postcard on p. 35.

Tool Holder

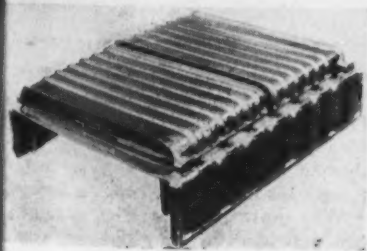
A tool holder for use on turret lathes and lathes with a square tool post allows shops to standardize on one size tool. It cuts down setup time and speeds pro-



duction by eliminating the direct setup of the tool in the tool post. Multiple cutting is possible in one operation, and large cuts can be made with small tools. The holder takes 1/2 in. tools that are held by two screws. A tool can be used from either end of the holder allowing turning, facing or short boring operations. Two size holders are available. Rusnok Tool Works. For more information, check No. 38 on the postcard on p. 35.

Steel Collapsible Box

Sixty-six pct space saving is claimed for a new steel collapsible box that can be readily set up or



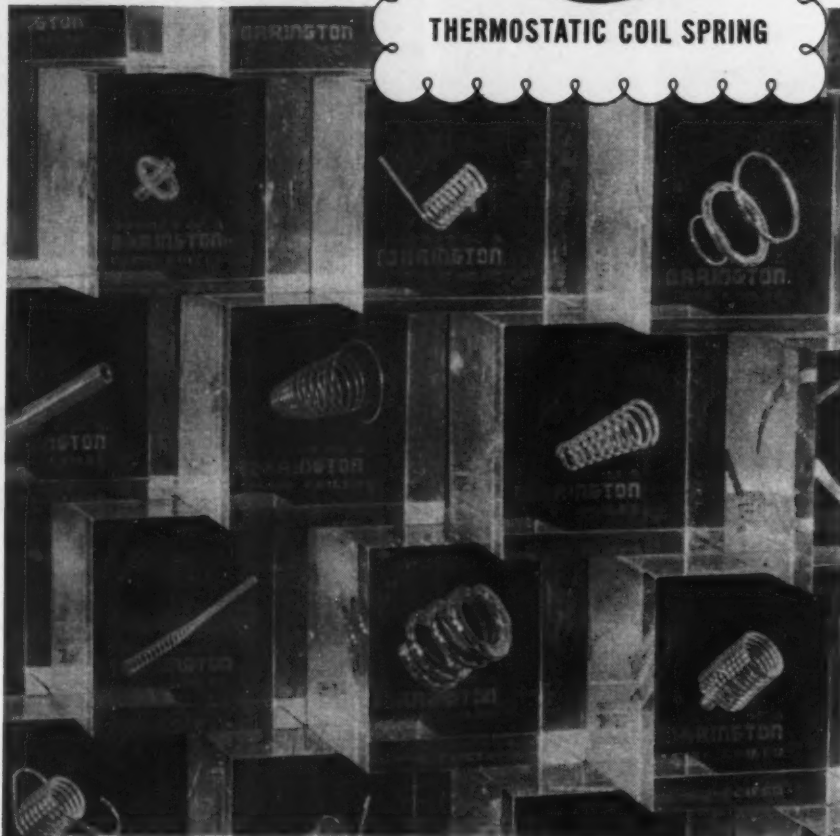
knocked down and can be handled with platform or fork truck. The collapsible sides, when in position, are positively locked by pin and slide bolt arrangement. The box is manufactured in various widths, lengths and heights and it can be tiered, loaded, or empty, when

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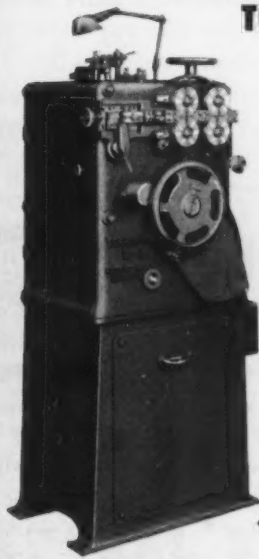
Can your Spring
Coiler make this?



THERMOSTATIC COIL SPRING



Solve tough springmaking problems faster with a TORRINGTON SPRING COILER



Torrington's W-11 Spring Coiler

These versatile machines, with their special attachments and tool arrangements, simplify the toughest kind of springmaking problems. Professional springmakers everywhere say you just can't beat 'em for *Speed, Accuracy and Economy!*

The Thermostatic Coil spring (shown above) is just one of an endless number of exacting jobs you can turn out with a Torrington Spring Coiler. For full details on any springmaking problem you may have, just drop a line to our Sales Department.

The TORRINGTON
MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT

<p>"It's our government of the people by the people for the people"</p> 	<p>"Above everything it's reward for individual initiative and enterprise"</p> 	<p>"It's our right to choose the work we like"</p> 	<p>"It's the machine which multiplies production"</p> 	<p>"More than machines it's our philosophy of more goods of better quality at lower costs plus higher wages"</p> 	<p>"Free markets and competition made America"</p> 
<p>"It's know-how and our ability to invent things"</p> 	<p>"It's labor's right to organize and bargain with its employers"</p> 	<p>"It's our willingness to invest money in new undertakings"</p> 	<p>HAVE THEY CAUGHT THE SECRET OF AMERICA'S GREATNESS?</p> <p>Yes, each one is right about the U.S. Way...</p> <p><i>but only partly right at best!</i></p>		

Did you ever stop to think that there never has been—and probably never will be—another country just like America, or as strong as America? And have you ever noticed that—even here—there is seldom agreement as to *why* America is strong? What is the answer?

The answer seems to be that *no one* quality ever completely describes or defines America. We're strong because we enjoy the most unique

combination of qualities that keep a nation strong and productive of any country on earth.

But we have only just begun. We still have our faults which we'll have to correct. We still have sharp ups and downs in prices and jobs. Yet our system has brought more benefits to more people than any other system ever devised.

We can overcome these faults, go on to greater heights—if we all pull

together to produce more and more for every hour we work. Teamwork to produce better has usually brought us higher wages, shorter hours, better quality and more happiness for everyone.

The U. S. Way can mean a better way of life for all of us. Guard it—improve it. It's *your* future.

**THE BETTER WE PRODUCE
THE BETTER WE LIVE**

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WHEN TO USE

SINGLE ROW RADIAL

VACUUM SEAL BALL BEARINGS

If your application calls for a sealed bearing able to take combined radial and thrust loads in any direction—and the outer ring is to be stationary—Federal Single Row Radial Vacuum Seal Ball Bearings hold the answer to your problem.

These bearings, whose load ratings are identical with Federal Conrad Type Bearings, provide an absolutely effective seal without felt, cork or fillers of any kind. A metal impeller, secured to the inner ring, keeps the lubricant in the vital bearing parts by centrifugal force. An outer plate, fitted into a groove in the outer ring, completes the seal. These design features assure smooth, quiet operation and completely eliminate noise, heat and sliding friction.

Federal Vacuum Seal Ball Bearings are ideally suited for electric motors and generators, and many other industrial applications where effective sealing is necessary.

You'll find complete specifications and load rating tables for these and all other Federal Bearings in our Catalog "K." It describes every type and size bearing, shielded and sealed...for every anti-friction need. Its 260 pages of ball bearing information, including selection charts, will help you compute bearing loads, determine capacities at every speed, and choose the type and size bearing best suited to your individual need. Write today for your copy.

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ONE OF AMERICA'S LEADING BALL BEARING MANUFACTURERS



Quality since 1908

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ATLAS

INTRA-PLANT HAULAGE

**SPEEDS PRODUCTION
LOWERS COSTS**

40 TON

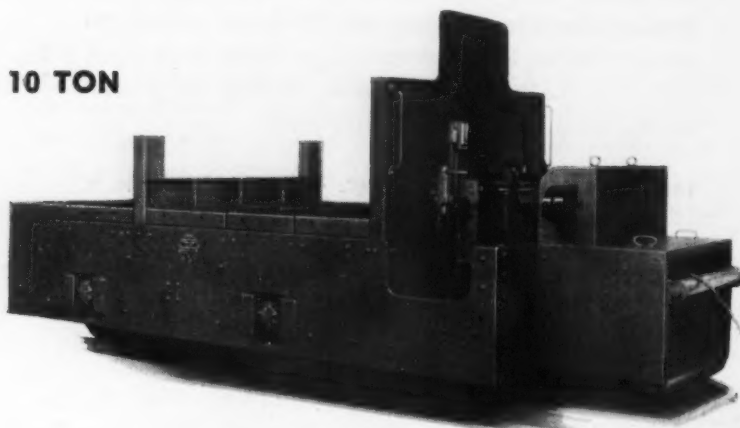


FLAT CAR

STORAGE BATTERY POWERED

Car equipped with triple reduction drive to one axle. Magnetic brake on motor armature shaft and controller arranged to return to "off" position automatically. Car also arranged to haul a similar trailer on level track.

10 TON



CABLE-REEL LOCOMOTIVE

Car has 60 HP motor. Current applied through motor-driven cable reel. Spring mounted journals with roller bearings. Operator protected from hot materials by 3" of insulating between steel partition. Hydraulic brake equipment and standard safety features.

**ATLAS ENGINEERING SERVICE
IS ALWAYS AT YOUR SERVICE**



THE ATLAS CAR & MFG. CO.

ENGINEERS AND MANUFACTURERS

1340 MAIN ST. CLEVELAND 10, OHIO U.S.A.

NEW

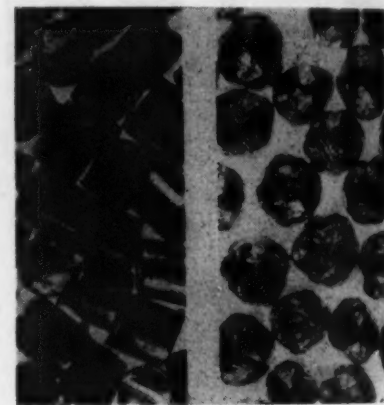
PRODUCTION IDEAS

Continued from p. 175

set up. It can be equipped for crane handling and for handling with a two or four way truck entry. *Truscon Steel Co. For more information, check No. 39 on the postcard on p. 35.*

Wire Shot

Cutwire Shot for peening and cleaning is made from SAE 1065 wire for high tensile strength, hardness (46-52 Rc) and maximum fatigue resistance. It is available in 0.014-0.072 in. diam. Its life is

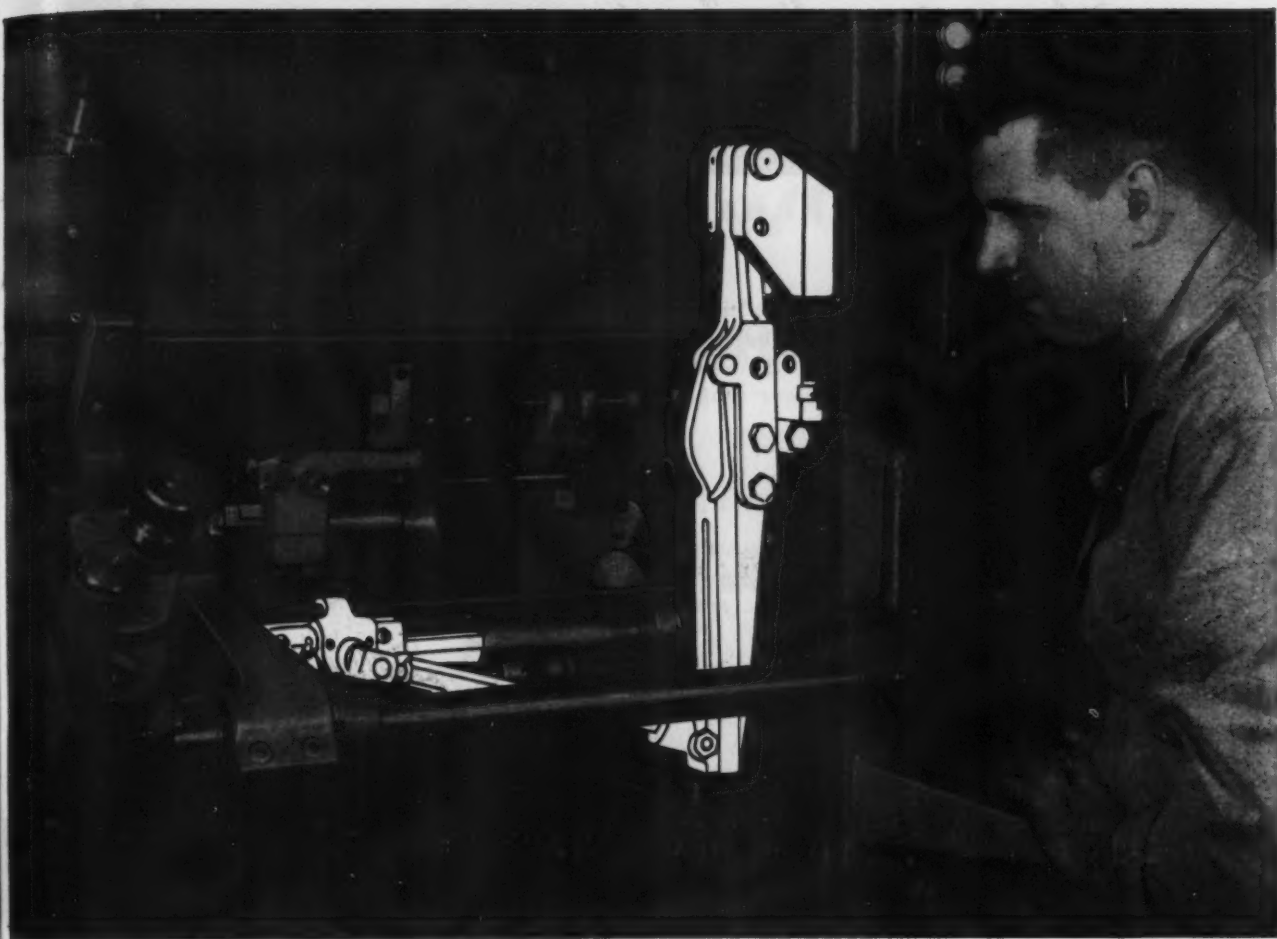


said to be 1500 cycles. Other advantages claimed are uniformity of physical properties and maintenance of size. Users are said to be saving 20 to 40 pct in machine maintenance. The shot quickly deforms into a full round shape of uniform size, that is maintained for 98 pct of its long period of use. *Precision Shot Co. For more information, check No. 40 on the postcard on p. 35.*

Electric Drill

Designed for high and low speed work in steel or hardwood, a two-speed drill has a gear shift arrangement that extends the use of the drill from 1/4 to 5/8 in. in steel and 1/4 to 1 1/4 in. in hardwood. With the three drill settings (high-neutral-low) the operator is able to quickly shift from neutral to

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AN "Extra Position" FOR LOW-COST PRODUCTION

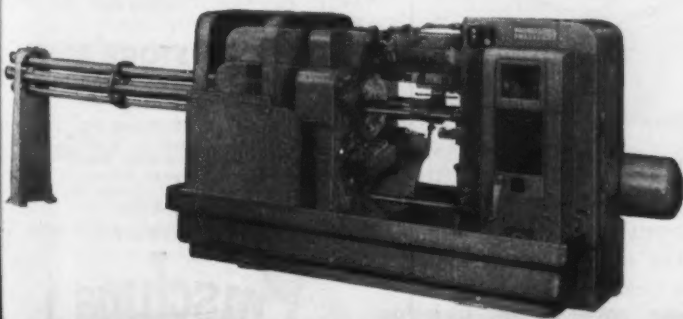
**At the Cut-off Position on a Warner & Swasey Automatic
You Can Also Drill, Ream, Face, C'bore, Tap or Thread**

When we ask users of Warner & Swasey Multiple Spindle Automatics what they find pays off most they invariably mention, first, "unusually fast setup" —then, the "extra position".

On their Warner & Swasey they have found they can use the fifth position reaming attachment for many operations, prior to cut-off and bar feed.

It gives them an extra position that enables more operations to be completed in the same cycle time.

Find out how you can reduce costs, boost your man-hour output, make a greater return on your investment in a machine tool. Call your nearest Warner & Swasey Field Representative or write . . .



**It's simpler to set up a
Warner & Swasey
CAMLESS Automatic!**



TURRET LATHES, MULTIPLE & SINGLE SPINDLE AUTOMATICS, PRECISION TAPPING AND THREADING MACHINES



IS A CHALLENGE TO YOUR FINISHING COSTS

CHALLENGE is the big word these days on all production jobs, if real economies are to be gained. And nothing can bear more scrutiny than the manual operations in a finishing department. For here you can substitute an efficient mechanical process—Roto-Finish—and make sizable savings!

Roto-Finish methods, materials and equipment put finishing on a production basis, processing huge quantities of parts at costs as low as 75% under tedious hand methods.

Roto-Finish is a versatile operation, adaptable to a host of different shaped parts and many surface requirements. Standard procedures make it easy to gain uniform results, maintain exacting standards, reduce rejects.

The many successful users are the answer that you, too, can profitably employ mechanical Roto-Finishing. Send sample parts for processing, and you'll have the proof! Include finished piece as guide. No obligation.

FOREIGN REPRESENTATIVES

Melbourne, Australia—A. Flavell Pty. Ltd.
London, England—Roto-Finish Ltd., 32 Bishopsgate
Windsor, Canada—F. B. Stevens of Canada Limited
Den Haag, Holland—N.W. Roto-Finish Maatschappij
voor Benelux

ROTO-FINISH COMPANY
3834 Milham Road, Kalamazoo, Mich.

ROTO-FINISH

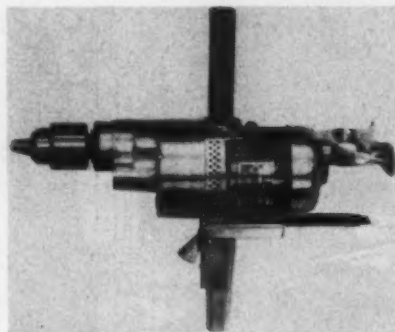
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NEW

PRODUCTION IDEAS

Continued from p. 178

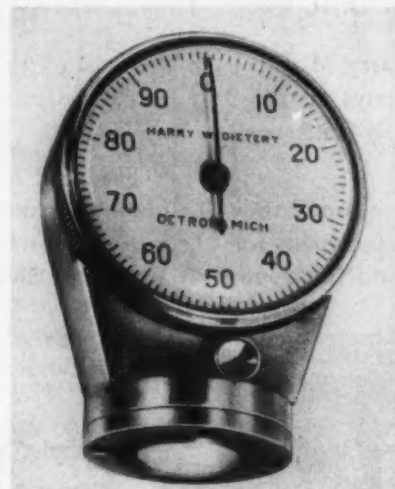
low to high while the motor is operating, eliminating the possibility of stripping gears. The rpm in the power range is 460, and 880 in the



fast range. The drill is powered with a universal motor. *Louisville Electric Mfg. Co.* For more information, check No. 41 on the postcard on p. 35.

Core Tester

Measurement of the hardness to which green cores are rammed in the foundry is possible with a new hardness tester. Depth of penetration of a 1/2 in. diam ball into the

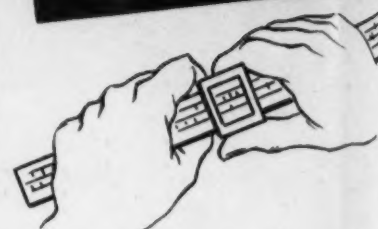


green core is indicated on the dial of the instrument and read as the hardness of the core. The green core hardness tester is a pocket-sized instrument. *Harry W. Dietert Co.* For more information, check No. 42 on the postcard on p. 35.

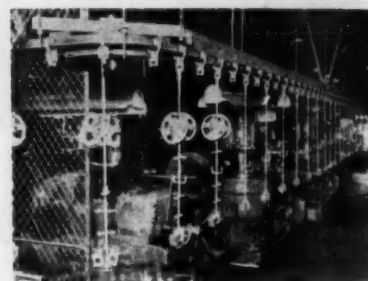
Resume Your Reading on Page 39

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● Modernize . . . mechanize your production with Buschman Universal Cable Trolley Conveyors. Stock units at low cost can be adapted to your special needs with no disruption of production or present facilities. Easily installed from standard sections . . . completely field-bolted . . . require no welding. For light and medium loads Cable Trolley Conveyors by Buschman are efficient, durable and far less costly than conventional chain conveyors. Buschman Engineers will gladly show you—at no cost—how the Universal Cable Trolley Conveyor can be "tailored" to your needs.

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Available for new Taft-Peirce #1 Precision Surface Grinders and the 6" Rotary Grinder, this attachment also can be installed on older type machines. For further information see your nearest T-P representative or write directly to —

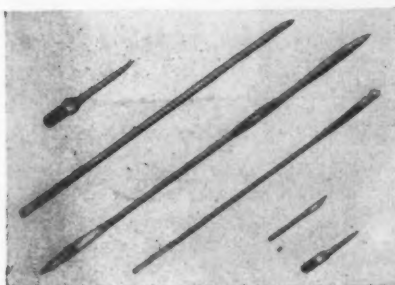


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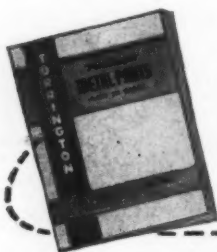


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186

• News of Industry •

Predicts the Possibility Of Building an Atomic Power Plant

San Francisco—It is possible to build an atom-driven electric power plant, according to such a prominent atomic scientist as Dr. I. Perlman of the University of California's radiation laboratory, who addressed the technical sessions of the American Institute of Electrical Engineers here recently.

Dr. Perlman says he's unable to predict the date or the cost of an atomic electric power plant because of such problems now being worked out as:

(1) How to get uranium out of low-grade ore economically and how to transport it. (A small cube of uranium, about the size of a standard ice cube, has potential power of 10 million kw—or enough energy to supply power for an entire day to a city of half a million.

(2) How to get usable power out of chain-reactions. Most of the power is now low-temperature and not practicable for commercial purposes.

(3) How to solve such technological problems as obtaining materials which will stand high temperatures. Steel is unusable, and scientists must look for new materials, possibly developing a new metallurgy to implement the nuclear energy experiments.

Most of these problems can be solved, says Dr. Perlman, so the success of commercial nuclear power depends on time. He adds that a new possibility lies in present experiments with "breeding" or converting the bulk of nonfissionable uranium into a fissionable form (plutonium 239) so as to produce more fissionable material than originally available. This possibility would increase the usable supply of uranium one-hundred fold.

The University of California scientist believes that the first commercial use of atom-driven power will be in some industry where cost is not a consideration. He believes that it will not be possible to estimate the cost of the first plant until after it is almost entirely constructed.

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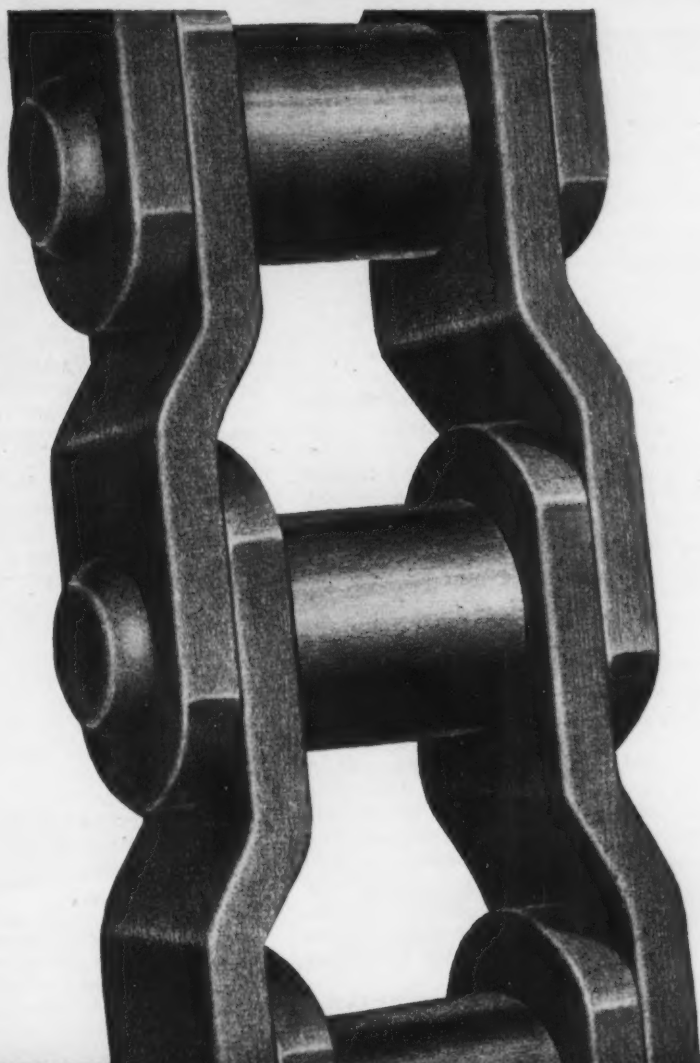
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—Dear Editor...

AIR POLLUTION

We read with great interest the article on p 107 of the July 28 issue, entitled "Solves Foundries' Air Pollution Problem." Our extensive testing and research has shown that the wet dust trap atop the cupola stack removes about 50 pct of the total particulate matter (the coarse material only) in the gas. The material removed, therefore, is that which ordinarily would fall on the roof or near the stack; the balance is that which remains suspended for an appreciable time and contributes so much to the smog problem of large cities, both in obscuring the rays of the sun and in the corrosion of everything it contacts on settling. The emission of 225 lbs per hr of particulate matter into the atmosphere (while removing a like amount from the gas) might satisfy the requirements of such a city as Cleveland; it would fall short of those of the Los Angeles County Air Pollution Control District.

Kennard & Drake
Los Angeles

JOHN DRAKE

Reader Drake was co-author of "Control of Cupola Stack Emissions," Apr. 7, 1949, p. 88.

OLD TIMER

Although I will soon be 81 years old, I still have an office at the plant, but I am not very active. However, I still read IRON AGE to keep abreast of trade and look for guide posts. I would appreciate a copy of p 75 of the June 16 issue.

JOSEPH P. CRANSTON
Fort Atkinson, Wis.

Pleased to hear from you and a copy of p 75, June 16 issue has been mailed. (Reader Cranston was vice-president of James Mfg. Co., Ft. Atkinson, Wis., and retired over 10 yrs ago.)—Ed.

PIPE AND TUBING

Please send us a list of the names of manufacturers of pipe and tubing in the U. S.

R. LEBOW
Imperial Pipe & Supply Co.
Los Angeles

A list of pipe and tubing manufacturers has been sent.—Ed.

WROUGHT IRON PIPE

In composing a short story about the early oil and gas development in Ohio, I find that it is closely connected with the development of the iron and

steel industry. We know that in 1838 neither wrought iron nor steel pipe were available. The record is not altogether clear as to what kind of pipe Col. Drake used in the drilling of his first oil well in 1859. We do have a record of wrought iron pipe having been used in 1873 to transport natural gas. In 1870, a wooden pipe line was constructed to deliver gas to Rochester, N. Y. I have in my office sections of wooden pipe which were originally installed for the distribution of manufactured gas in northern Ohio somewhere over a hundred years ago. If you have any information as to the dates when wrought iron pipe was first available or used in this country, in connection with the oil or gas industry, I should appreciate having reference to it.

T. H. KERR
Associate Professor

Ohio State University
Columbus, Ohio

References from several sources indicate that wrought iron pipe was used in 1815 to distribute coal gas in London, England. It was first used to carry coal gas in the U. S. in about 1824. A cast iron pipe line was laid in 1863 to carry oil in Pennsylvania but was discontinued because of faulty pipe. Later that year, a 2 in. diam. wrought iron pipe line was laid to carry oil from the tar farm at Oil Creek to the Humbolt Refinery at Pulmer, Pa., a distance of about 2½ miles.—Ed.

MISSING ISSUES

Sorry for not writing you sooner but I have been ill. There are a number of issues of THE IRON AGE which I have not received. I suppose that the missing copies have been appropriated by customs officials. However, I had anticipated this, but I was so interested in receiving your publication that I was willing to take the risk. I realize that the situation is out of your hands, but I thought you might like to know what is going on. Will you please send me a copy of the Chart of Comparable Tool Steels and also the Directory of Tool Steels. Payment for these is enclosed.

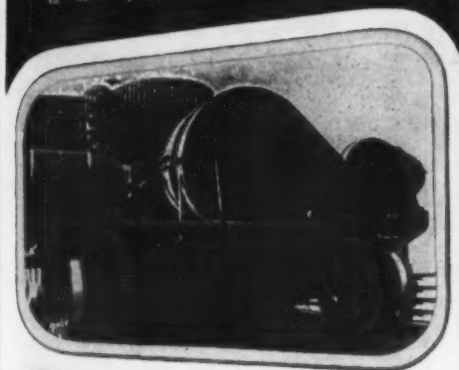
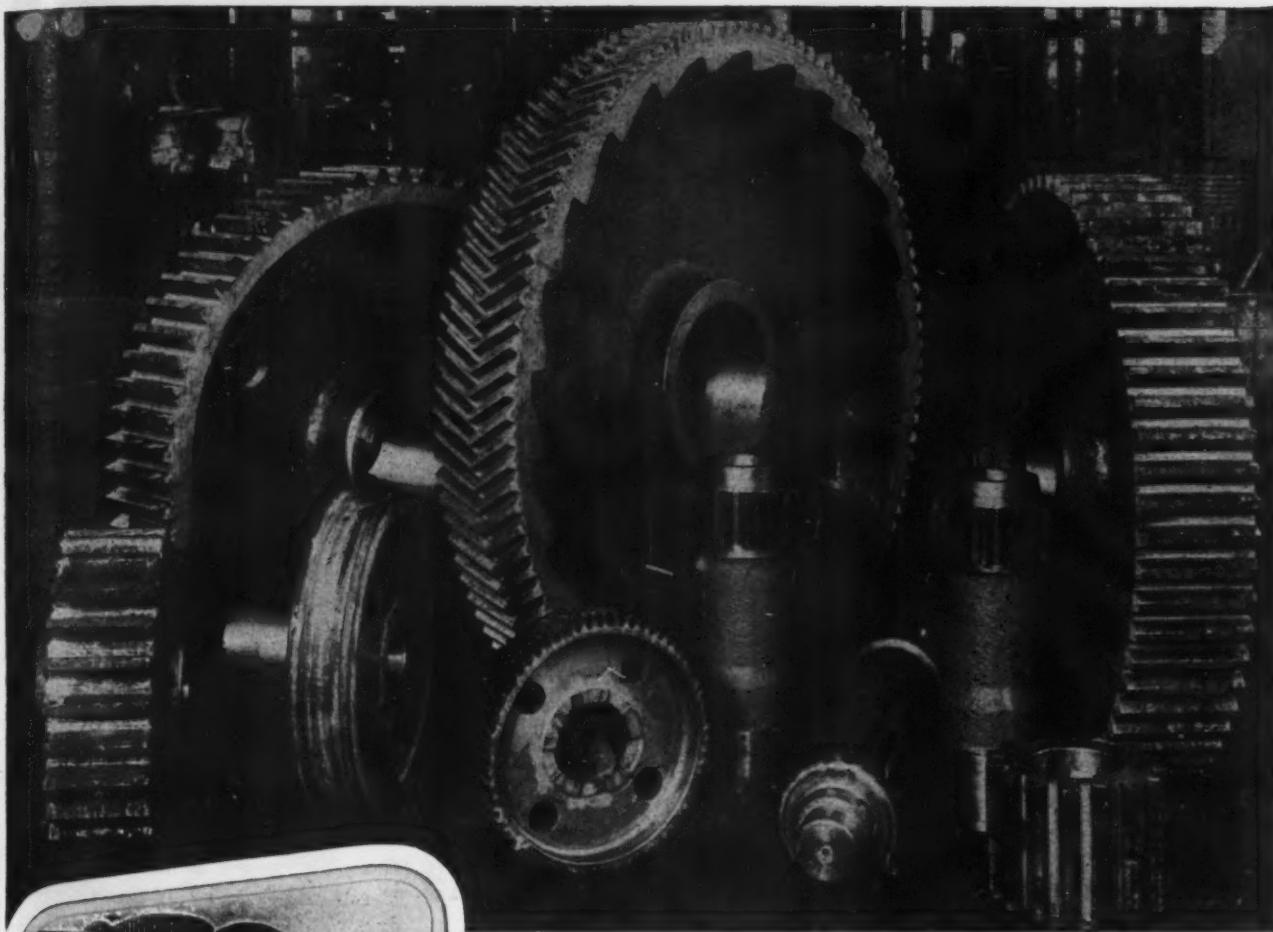
NAME WITHHELD
Mexico City, Mexico

EXTRUSION OF STEEL

Your issue of Aug. 4 calls for compliments. Typographic face lifting has more than novelty value. What you've done shows your readers and advertisers how to be progressive—gives

Turn to Page 194

THE IRON AGE



FOR COMPARATIVE PURPOSES

We tabulate below the physical properties of the surface and core values of SAE-1020, SAE-2315, Steels, Carburized or Case Hardened with "NELOY" and "NELOY-MOLY" Steels Normalized or Liquid Quenched, Finish Machined and Flame Hardened.

	Ultimate Tensile Lbs. per Sq. In.	Elastic Limit or Yield Point Lbs. per Sq. In.	Elongation Percent	Reduction of Area Percent	Brinell	Sclero- scope
S.A.E. 1020 Case Hardened (Surface)...	260/300,000	180/195,000	5-10	8-12	514-601	71-81
S.A.E. 1020 Case Hardened (Core).....	60/ 70,000	30/ 35,000	30-35	40-50	120-140	17-20
Neloy Annealed and Flame Hardened Treatment 10B (Surface).....	218/270,000	190/240,000	8-12	20-35	477-590	66-80
Neloy Annealed and Flame Hardened Treatment 10B (Core).....	85/ 90,000	56/ 65,000	23-40	30-40	163-170	23-24
S.A.E. 1020 Case Hardened (Surface)...	260/300,000	180/195,000	5-10	8-12	514-601	71-81
S.A.E. 1020 Case Hardened (Core).....	60/ 70,000	30/ 35,000	30-35	40-50	120-140	17-20
Neloy Heat-treatments No. 3 and 10B (Surface).....	220/270,000	200/240,000	8-12	20-35	550-590	68-80
Neloy Heat-treatments No. 3 and 10B (Core).....	100/110,000	80/ 90,000	20-26	40-50	202-240	29-33
S.A.E. 2315 Case Hardened (Surface)...	290/329,000	185/205,000	4- 8	6-10	570-653	78-87
S.A.E. 2315 Case Hardened (Core).....	112/129,000	99/120,000	12-20	38-51	249-275	35-39
Neloy-Molybdenum, Normalized, Drawn and Flame Hardened (Surface)	258/281,000	212/247,000	6-10	8-12	514-555	71-75
Neloy-Molybdenum, Normalized, Drawn and Flame Hardened (Core)	90/110,000*	65/ 85,000*	18-25	30-40	190-220	28-33
S.A.E. 2315 Case Hardened (Surface)...	290/329,000	185/205,000	4- 8	6-10	570-653	78-87
S.A.E. 2315 Case Hardened (Core).....	112/129,000	99/120,000	12-20	38-51	249-275	35-39
Neloy-Molybdenum Heat-treatments 3A and 10B Flame Hardened (Surface)	282/318,000	217/265,000	4- 8	6-10	555-627	75-84
Neloy-Molybdenum Heat-treatments 3A and 10B Flame Hardened (Core)	132/150,000	120/135,000	10-18	25-35	290-320	41-45

*The variation in tensile and yield in the third table is due to the alloyed elements of 2315 which is a nickel steel. This produces a higher physical on a straight annealed steel compared with more economical alloy used in Neloy Moly.

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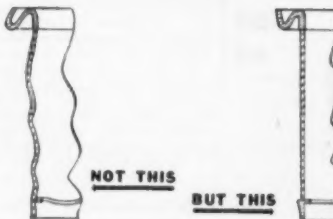
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• News of Industry •**Celsius to Replace Centigrade**

Washington—In the interest of uniformity of practice the use of the word Celsius instead of Centigrade appears desirable. But it is not practicable to impose this term on those who prefer Centigrade. This is according to the Ninth General Conference on Weights and Measures, held in Paris, which adopted the name Celsius for the scale of temperature which has more commonly been called Centigrade.

The British Standards Institution and the Journal of the Iron and Steel Institute have recently announced acceptance of the use of the term Celsius as a temperature measurement unit in place of the word Centigrade.

Since the adoption of its use, the term Centigrade has been a constant source of confusion, because in French the "grade" is a unit of angular measure in which the right angle is divided into a hundred grades. In Scandinavia and Central Europe, the scale is known by the name of its originator, Celsius.

U. S. Buys Rubber for Stockpile

Washington — Additional purchases of natural crude rubber totaling approximately 21,000 long tons for U. S. stockpiling have been reported by the Economic Cooperation Administration. Purchases were made through the London rubber market at a cost of about 2,100,000 pounds sterling, or approximately \$8,463,000.

Previously ECA has purchased 26,000 long tons of rubber through the London market with counterpart funds for U. S. stockpiling, making the total acquired to date 47,000 long tons.

Dinner Held at Rail Fair

Chicago—Five hundred guests from coast to coast were present at the Ralph Budd testimonial dinner held at the Chicago Railroad Fair on Aug. 31. The meeting was presided over by William T. Faricy, president of the American Assn. of Railroads.

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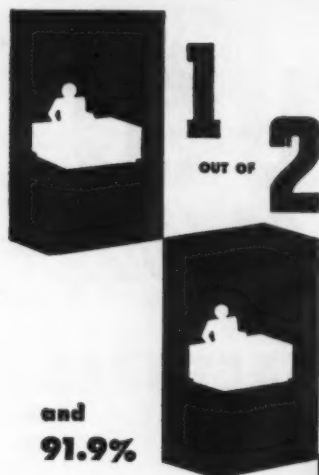
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(Continued from Page 28)

turn to the markets which they formerly held.

This may be purely a temporary phenomenon and suitable financial adjustments at home may restore the internal demand. However, it is unlikely that once German exporters get back into the market they will withdraw again, except under great pressure.

Available information seems to indicate that if internal prices were readjusted to cover costs and all subsidies, hidden or direct, were removed, German home prices would be higher than those of Britain or the U. S. This may be true in spite of the lower level of wage rates in Germany.

View Is Supported

This view of western Germany's future competitive position was supported by Director Barich, chairman of the recently formed Iron and Steel Industries Economic Federation (Wirtschaftsvereinigung Stahl und Eisen). Deploing the steady rise in costs, he pointed out that in the past home industries could get export subsidies which would be prohibited in future. He compared the standstill on development and modernization in Germany with events in other countries and called for a large investment program to modernize the industry if it were to survive even to supply home requirements.

There is considerable incentive to export. But this has been restrained until recently by the strict enforcement of the export quota system under a policy of German requirements first and the export of steel in the most highly finished form. The incentive is provided by much higher prices allowed, which have helped the lucky few to make ends meet.

Seek New Solutions to Dollar Deficits

Paris—Necessity of finding new solutions to the European dollar deficit problem is the most important conclusion in the report of the council of the Organization for European Economic Cooperation. Adopted unanimously, the report announces details of the division of \$3,776,500,000 of direct dollar aid and \$886,500,000 in intra-European aid for 1949-50.

The final part of the report prepared by

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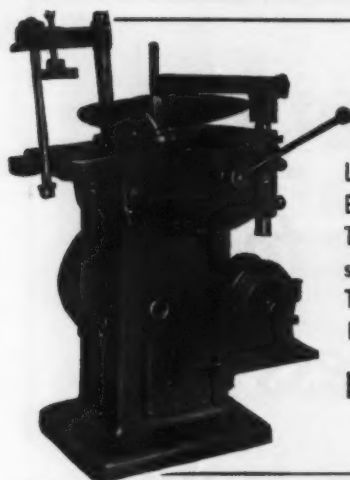
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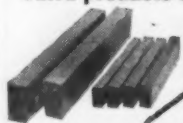


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GLOBAL LETTER

Continued

Baron Jean Snoy, chairman of OEEC, and Mr. Marjolin, general secretary, underlines the fact that exports to dollar areas have not improved as expected some months ago. Reason given for this is the sudden change from a sellers' to a buyers' market—which came before completion of various modernization and equipment plans, as well as in a climate of artificial currency.

Recovery Is Slower Than Expected

"If it was at one time our belief," says the report, "that European recovery was proceeding fast enough to make it possible to achieve visibility in 1952, we must now admit that the rate of progress is not sufficient. The dollar problem, despite the improvement in the situation over the last 2 years, is not on the way to solution.

Commenting on the report at a press conference, Mr. Marjolin pointed out that the truth was that the situation was more acute than thought some months ago. Reduction of the dollars' deficit was proceeding slower than reduction of American aid. Europe was not on the way to balance by its own means its dollar requirements by 1952. It will still have by then a deficit of \$3 billion (against \$8 billion in 1947, \$4.4 billion in 1948 and \$3.8 billion which it is hoped will not be exceeded in 1949).

However, concluded the general secretary of OEEC there are no reasons to be pessimistic. The difficulties encountered are not of such an order that they could not disappear. But yet they are there.

Loan to Yugoslavia Is Expected

Belgrade—The Export-Import Bank is giving favorable consideration to a loan of about \$25 million requested by the government of Yugoslavia. An announcement to the effect that such a loan has been granted is said to be not far away.

Proceeds of such a loan would be used to equip the country's nonferrous metal mines in order to increase production for export to foreign markets. Export of such nonferrous metals as copper, lead and zinc is counted upon by the Tito government to increase dollar credits with which to purchase equipment for other projects.

An Export-Import Bank loan would also enable Yugoslavia to make machinery purchases in the U. S. until the World Bank has acted on a number of applications for loans. The mission of the World Bank now in the country is not expected to complete its studies for another month.

Tito is said to have offered to pledge part of the production of his country's nonferrous metal mines as repayment for the Export-Import Bank loan.

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